

**UNDERGROUND INJECTION CONTROL
PERMIT APPLICATION**

**Ute Tribal # 17-12
2527' FSL & 612' FWL
Sec. 17, T5S-R3W
Duchesne County, Utah
API # 43-013-31713**

July 2015

Prepared for:
Bruce Suchomel
Groundwater Program, Mail Code 8P-W-UIC
U.S. Environmental Protection Agency
1595 Wynkoop St
Denver, CO 80202-1129

Prepared by:
Petroglyph Energy, INC.
960 Broadway Avenue, Suite 500, P.O. Box 70019
Boise, Idaho 83707
(208) 685-7600
FAX (208) 685-7605

LIST OF ATTACHMENTS

- Attachment No. 1 Area Topography Map
- Attachment No. 2 Site Map
- Attachment No. 3 Map of the A-Marker surface
- Attachment No. 4 Cross-Sections of the injection formation
- Attachment No. 5 Water Analysis
- Attachment No. 6 Completion data for all wells in the AOR
- Attachment No. 7 CBL for the UIC well
- Attachment No. 8 Open hole log for the UIC well
- Attachment No. 9 List of owners and Affidavit Notification
- Attachment No. 10 Well bore diagrams for the UIC well
- Attachment No. 11 P&A procedure
- Attachment No. 12 MIT procedure
- Attachment No. 13 Surety Bond letter

SUMMARY DOCUMENT
UIC WELL APPLICATION
Ute Tribal 17-12
API # 43-013-31713

The following document contains information provided in support of the application for the conversion of the Ute Tribal 17-12 well to an injection well in the Green River formation in the Antelope Creek Field in Duchesne County, Utah.

The Antelope Creek Field falls within the Uintah and Ouray Indian reservations and is within Indian Country; therefore, for facilities located on the reservation, only EPA-issued UIC permits are necessary for compliance with UIC regulations.

The EPA has issued an Area Permit #UT20736-00000 for the Underground Injection Control for the Antelope Creek Field. This area permit allows for additional producing wells to be converted to injection wells for enhanced recovery.

- (1) Petroglyph Energy, Inc. (Petroglyph) is the operator and only working interest owner of wells located in the Antelope creek Field, Duchesne County, Utah. Petroglyph's business address is provided below:

Petroglyph Energy, Inc.
960 Broadway Avenue, Suite 500
P.O. Box 70019
Boise, ID 83707

- (2) Enclosed as Attachment No. 1 is a topographic map of a portion of the Antelope Creek Field, identifying all wells located in this area. The legal location for the Ute Tribal 17-12 is 2527' FSL & 612' FWL NW/SW Sec. 17, T5S-R3W.
- (3) Attachment No. 2 is a map of the well. This map shows a circle with a ¼ mile radius centered on the Ute Tribal 17-12 well. The ¼ mile radius encompasses the area of review, AOR, within which Petroglyph is required to investigate all wells for mechanical integrity. The ¼ mile radius also identifies mineral ownership; all lands within the AOR are leased to Petroglyph by the Ute Tribe as indicated by yellow shading. The AOR has Ute Tribal 17-05, Ute Tribal 17-12F, Ute Tribal 17-12M, Ute Tribal 18-09, and Ute Tribal 18-16J well(s) located in its ¼ mile radius.

- (4) Petroglyph proposes to utilize the Ute Tribal 17-12 as an injection well for enhanced recovery in the Antelope Creek Field.
- (5) Injection Zone – The injection intervals are between 3855’ and 5842’ True Vertical Depth and located in the lower portion of the Green River Formation. The injection zone is confined within a 1987’ section between the Green River “A” Lime marker bed and the top of the Basal Carbonate in the lower part of the formation. The injection zone is composed of lenticular calcareous sandstones interbedded with low permeable carbonates and calcareous shales. The lenticular sandstones vary in thickness from 1 to 30 feet.

Confining Zone – The overall confining strata above the injection zone consists of impermeable Green River calcareous shales and continuous beds of microcrystalline dolostone. The confining zone in the Ute Tribal 17-12 is 232 feet thick.

Attachment No. 3 is a structure map of the A-Marker surface.

Attachment No. 4 is a cross-section of the injection interval and confining zone.

- (6) Enclosed as Attachment No. 5 are standard analyses of produced water from three batteries that currently serve as central handling facilities for all project producing wells. The analysis of the Green River formation water from the Ute Tribal 18-08 Satellite Battery is 12805 mg/L of total dissolved solids (TDS), Ute Tribal 21-11 Satellite Battery is 15659 mg/L TDS, and Ute Tribal 34-12-D3 Satellite Battery is 14590 mg/L TDS.

Injectate in the field is a mixture of produced water and fresh make-up water. The nearest injection well is the Ute Tribal 18-09, the most recent analysis of the water being injected into the Green River formation at this location is 6316 mg/L TDS. This analysis is also included in Attachment No. 5.

- (7) A summary of completion data from the Ute Tribal 17-12 and offset wells in the AOR are included in Attachment No. 6
- (8) The cement bond log is included in Attachment No. 7.
- (9) The open hole log for the Ute Tribal 17-12 is included in Attachment No. 8.

(10) The Antelope Creek Field is operated under a Cooperative Plan of Development between the Ute Tribe and Petroglyph Energy. At the Ute Tribal 17-12 location, all mineral owners, surface owners and operators located within the AOR ¼ mile radius have been notified of the submitted EPA application to convert to injection. Attachment No. 9 is the Affidavit of Notification to all owners.

(11) Petroglyph requests a maximum surface injection pressure of **1818psi**. The EPA Area Permit No. UT20736-00000 uses the formula:

$$P_m = (0.88\text{psi/ft} - 0.43\text{psi/ft}(S_g)) D$$

Where:

P_m = Maximum surface injection pressure

0.88psi/ft = Fracture gradient

D = Top perforation depth

0.43psi/ft = Hydrostatic pressure/hydraulic head

S_g = Specific gravity of injection fluid

For the Ute Tribal 17-12:

$$\mathbf{1818\text{psi} = (0.88\text{psi/ft} - 0.43(1.00)) 4040\text{ft}}$$

(12) Three wellbore diagrams for the Ute Tribal 17-12 are in Attachment No. 10. One diagram is for production, one for injection, and one for Plug & Abandonment (P&A).

(13) The P&A procedure for this well is shown in Attachment No. 11.

(14) Once the draft permit is issued, Petroglyph will conduct a Mechanical Integrity Test and a static bottom-hole pressure test. The MIT procedure is contained in Attachment No. 12. The conversion work will be satisfactorily completed and submitted to the EPA on Form 7520-12. A wellbore schematic will be included with this form.

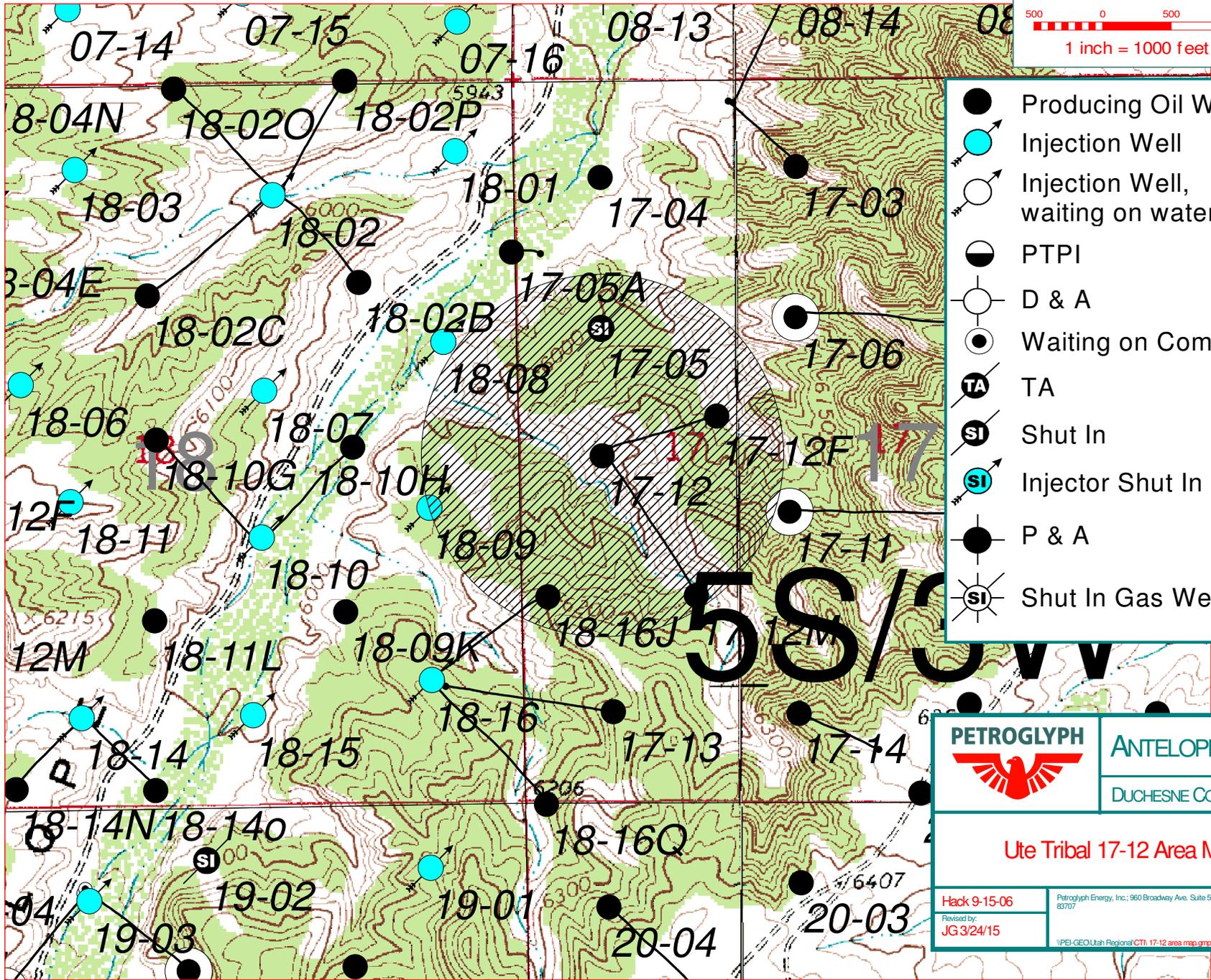
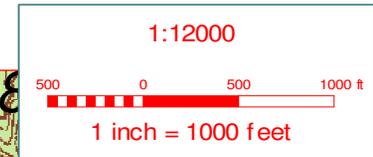
- (15) Petroglyph will give proof of financial responsibility by posting a surety bond for the UIC well prior to final permit approval. A copy of this letter is contained in Attachment No. 13.

- (16) Petroglyph will install various gauges on the well so that the injection pressure and tubing/casing annulus pressure can be monitored. The well will be equipped with a flow meter with a cumulative volume recorder.

ATTACHMENT NO. 1

AREA MAP

ATTACHMENT NO. 1:
AREA MAP



- Producing Oil Well
- Injection Well
- Injection Well, waiting on water
- PTPI
- D & A
- Waiting on Completion
- TA
- Shut In
- Injector Shut In
- P & A
- Shut In Gas Well

	ANTELOPE CREEK
	DUCHESNE COUNTY, UTAH
<p>Ute Tribal 17-12 Area Map</p>	
Hack 9-15-06 Revised by: JG 3/24/15	Petroglyph Energy, Inc.; 960 Broadway Ave. Suite 500 PO Box 70019 Boise, ID 83707 \PEI-GE\Utah Regional\CTI_17-12 area map.gmp

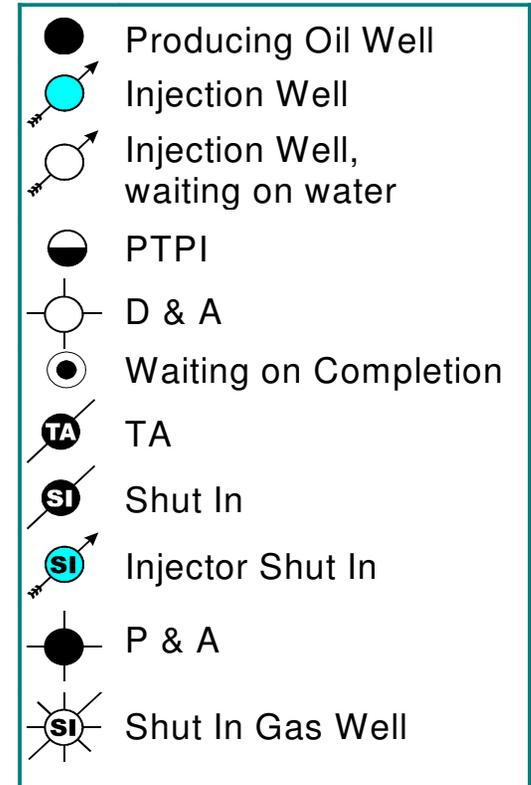
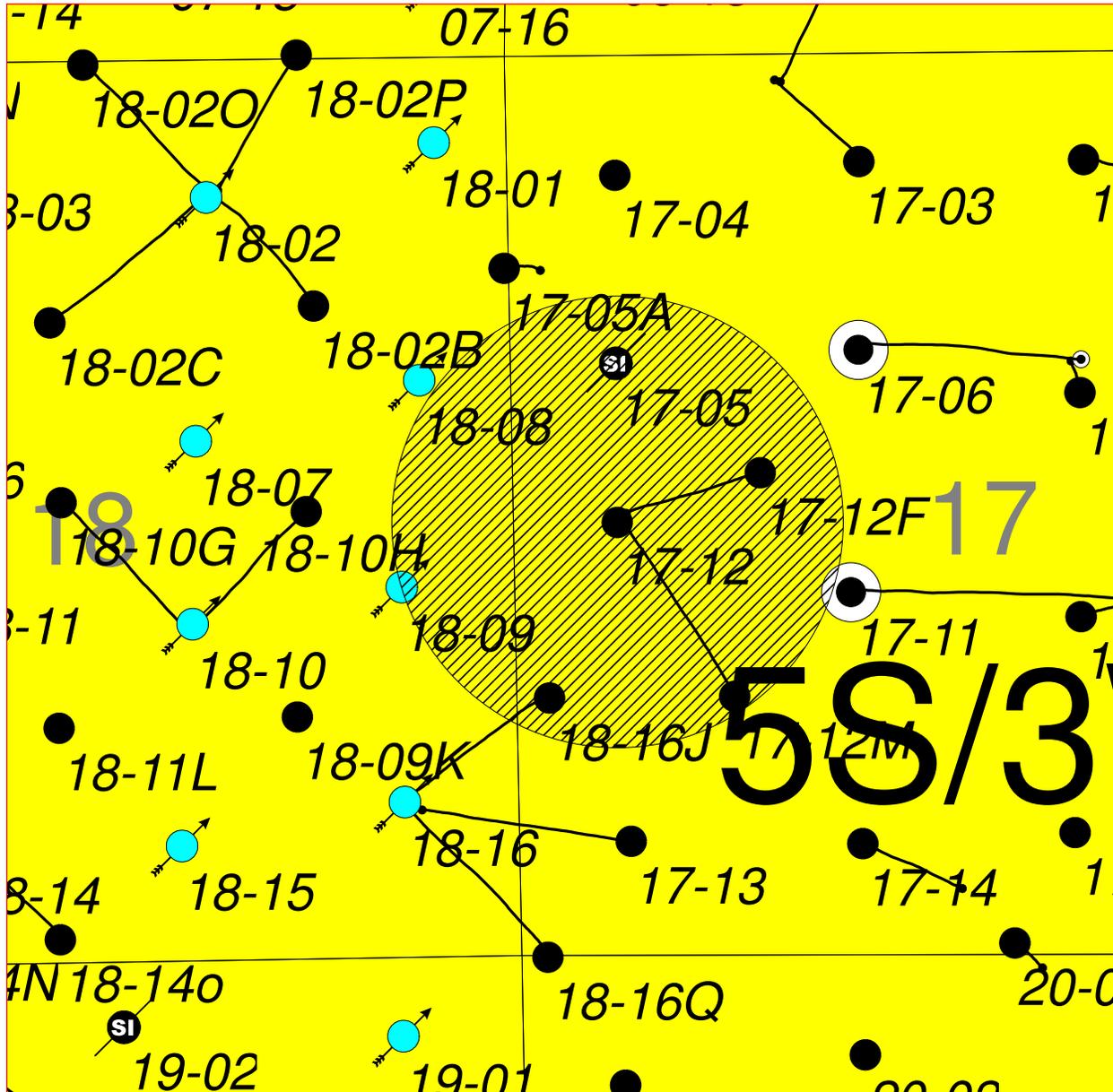
ATTACHMENT NO. 2

SITE MAP

RADIUS MAP OF ADJACENT WELLS

ATTACHMENT NO. 2:
SITE MAP

1:12000

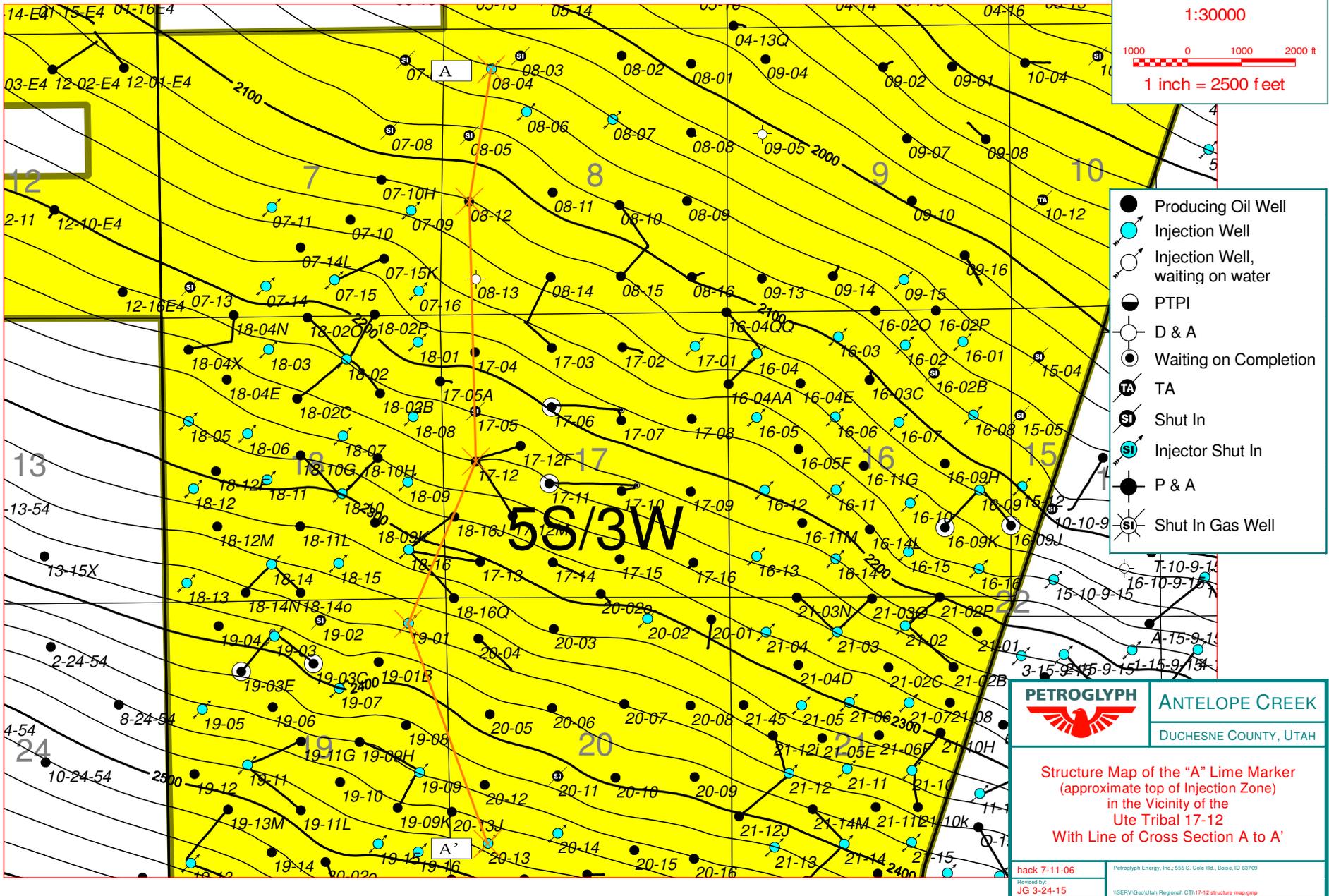


	ANTELOPE CREEK
	DUCHESNE COUNTY, UTAH
<p>Ute Tribal 17-12 Plat and Quarter-mile radius map. Ute Indian lands under Petroglyph lease shown in yellow</p>	
<p>Hack 9-15-06 Revised by: JG 3/24/15</p>	<p>Petroglyph Energy, Inc.; 960 Broadway Ave. Suite 500 PO Box 70019 Boise, ID 83707 PEI-GEOLah Regional/CTI, 17-12 quarter mile map.gmp</p>

ATTACHMENT NO. 3

MAP OF THE A-LIME MARKER SURFACE

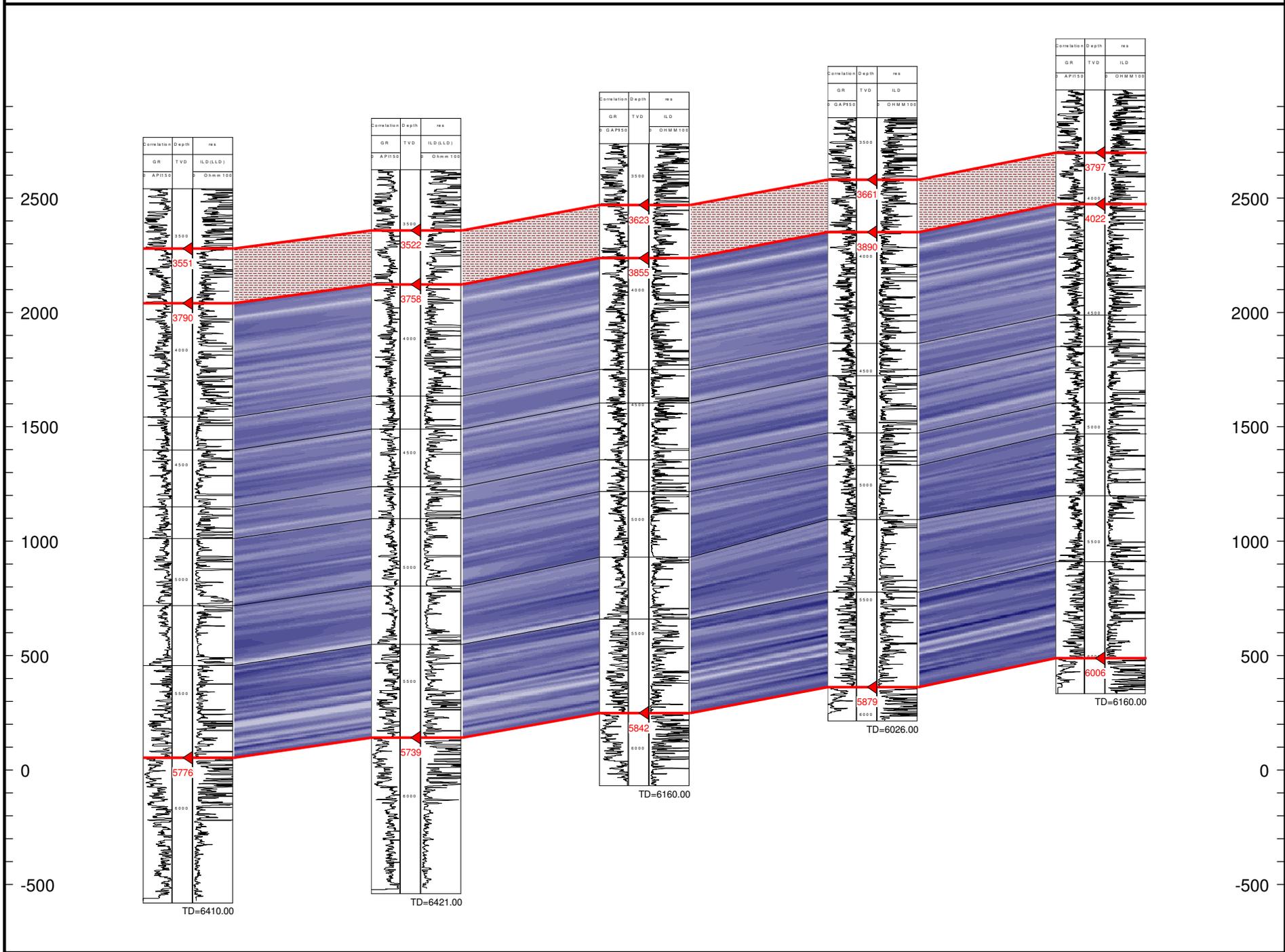
ATTACHMENT NO. 3: Map of the "A" Lime Marker



ATTACHMENT NO. 4
CROSS SECTIONS OF THE INJECTION FORMATION

Structural Cross Section A to A' in the Vicinity of Ute Tribal 17-12

43013307590000 2485 ft 43013311640000 4827 ft 43013317130000 3266 ft 43013319640000 4347 ft 43013319810000
 PETROGLYPH OPERATING COMPANY INC PETROGLYPH OPERATING PETROGLYPH OPERATING COMPANY INC PETROGLYPH OPERATING COMPANY INC PETROGLYPH OPERATING COMPANY INC
 Ute Tribal 08-04 Ute Tribal 08-12 UTE TRIBAL 17-12 Ute Tribal 19-01 Ute Tribal 20-13
 754 FNL 888 FWL 2100 FSL 515 FWL 2527 FSL 612 FWL 473 FNL 706 FEL 700 FSL 700 FWL
 TWP: 5S - Range: 3W - Sec. 8 TWP: 5 S - Range: 3 W - Sec. 8 TWP: 5 S - Range: 3 W - Sec. 17 TWP: 5 S - Range: 3 W - Sec. 1 TWP: 5 S - Range: 3 W - Sec. 2



ATTACHMENT NO. 5

WATER ANALYSIS

Water Analysis Report

Production Company: **PETROGLYPH OPERATING CO INC - EBUS**
Well Name: **UTE TRIBAL 18-08 SATELLITE, DUCHESN**
Sample Point: **PLANT DISCHARGE COMPLETE**
Sample Date: **4/21/2015**
Sample ID: **WA-307075**

Sales Rep: **James Patry**
Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from
Brine Chemistry Consortium (Rice University)

Sample Specifics		Analysis @ Properties in Sample Specifics			
		Cations		Anions	
		mg/L		mg/L	
Test Date:	4/21/2015	Sodium (Na):	4541.75	Chloride (Cl):	6000.00
System Temperature 1 (°F):	60.00	Potassium (K):	41.78	Sulfate (SO4):	163.00
System Pressure 1 (psig):	14.70	Magnesium (Mg):	28.63	Bicarbonate (HCO3):	1952.00
System Temperature 2 (°F):	180.00	Calcium (Ca):	67.44	Carbonate (CO3):	
System Pressure 2 (psig):	2000.00	Strontium (Sr):	5.41	Acetic Acid (CH3COO)	
Calculated Density (g/ml):	1.0061	Barium (Ba):	0.90	Propionic Acid (C2H5COO)	
pH:	8.50	Iron (Fe):	2.74	Butanoic Acid (C3H7COO)	
Calculated TDS (mg/L):	12805.08	Zinc (Zn):	1.29	Isobutyric Acid ((CH3)2CHCOO)	
CO2 in Gas (%):		Lead (Pb):	0.05	Fluoride (F):	
Dissolved CO2 (mg/L):	0.00	Ammonia NH3:		Bromine (Br):	
H2S in Gas (%):		Manganese (Mn):	0.09	Silica (SiO2):	
H2S in Water (mg/L):	0.00				

Notes:

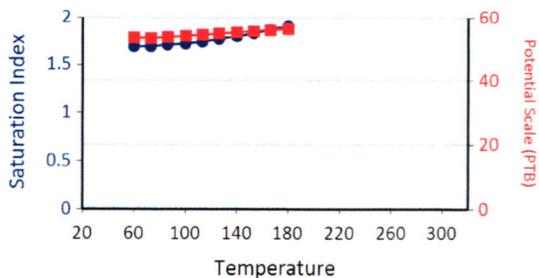
(PTB = Pounds per Thousand Barrels)

Temp (°F)	PSI	Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.91	56.41	0.09	0.09	0.00	0.00	2.59	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	1.87	56.05	0.13	0.14	0.00	0.00	2.54	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	1.83	55.66	0.19	0.19	0.00	0.00	2.49	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	1.80	55.27	0.26	0.24	0.00	0.00	2.44	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	1.77	54.86	0.33	0.29	0.00	0.00	2.38	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	1.74	54.46	0.42	0.33	0.00	0.00	2.32	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	1.72	54.08	0.52	0.38	0.00	0.00	2.26	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	1.71	53.72	0.64	0.41	0.00	0.00	2.20	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	1.69	53.39	0.77	0.45	0.00	0.00	2.14	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	1.69	53.56	0.92	0.47	0.00	0.00	2.08	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

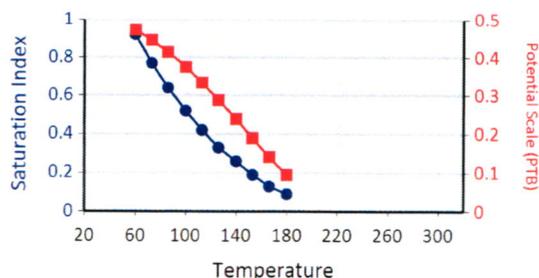
Temp (°F)	PSI	Hemihydrate CaSO4·0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	2.20	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	1.83	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	1.69	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	1.53	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	1.01	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water Analysis Report

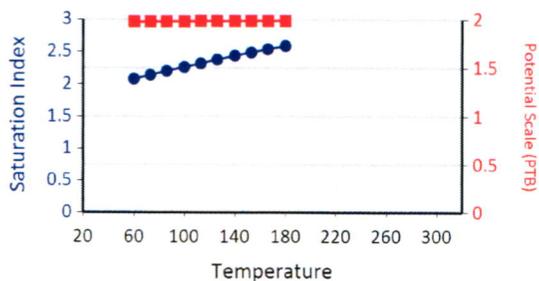
Calcium Carbonate



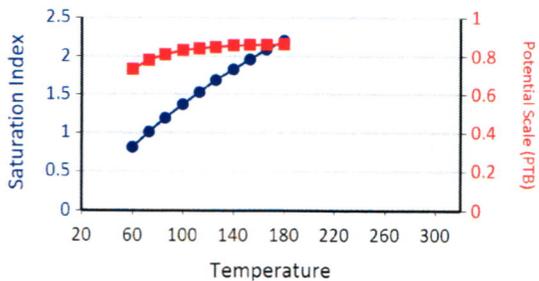
Barium Sulfate



Iron Carbonate



Zinc Carbonate



Water Analysis Report

Production Company: **PETROGLYPH OPERATING CO INC - EBUS**
 Well Name: **UTE TRIBAL 21-11 SATELLITE, DUCHESN**
 Sample Point: **PLANT DISCHARGE COMPLETE**
 Sample Date: **4/21/2015**
 Sample ID: **WA-307071**

Sales Rep: **James Patry**
 Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from
 Brine Chemistry Consortium (Rice University)

Sample Specifics		Analysis @ Properties in Sample Specifics			
		Cations		Anions	
		mg/L		mg/L	
Test Date:	4/21/2015	Sodium (Na):	5585.76	Chloride (Cl):	7000.00
System Temperature 1 (°F):	60.00	Potassium (K):	55.43	Sulfate (SO4):	277.00
System Pressure 1 (psig):	14.70	Magnesium (Mg):	10.62	Bicarbonate (HCO3):	2684.00
System Temperature 2 (°F):	180.00	Calcium (Ca):	30.52	Carbonate (CO3):	
System Pressure 2 (psig):	2000.00	Strontium (Sr):	6.47	Acetic Acid (CH3COO)	
Calculated Density (g/ml):	1.0081	Barium (Ba):	1.02	Propionic Acid (C2H5COO)	
pH:	8.70	Iron (Fe):	1.09	Butanoic Acid (C3H7COO)	
Calculated TDS (mg/L):	15659.01	Zinc (Zn):	6.88	Isobutyric Acid ((CH3)2CHCOO)	
CO2 in Gas (%):		Lead (Pb):	0.08	Fluoride (F):	
Dissolved CO2 (mg/L):	0.00	Ammonia NH3:		Bromine (Br):	
H2S in Gas (%):		Manganese (Mn):	0.14	Silica (SiO2):	
H2S in Water (mg/L):	35.00				

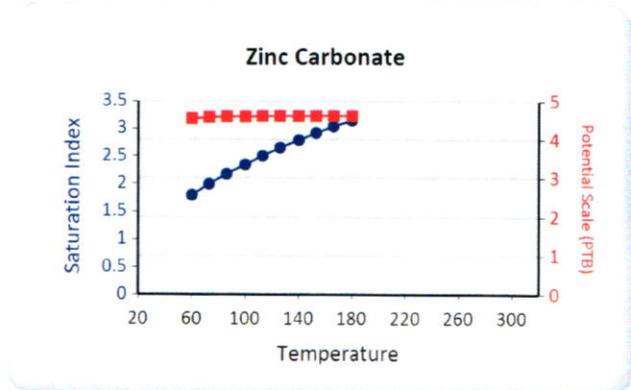
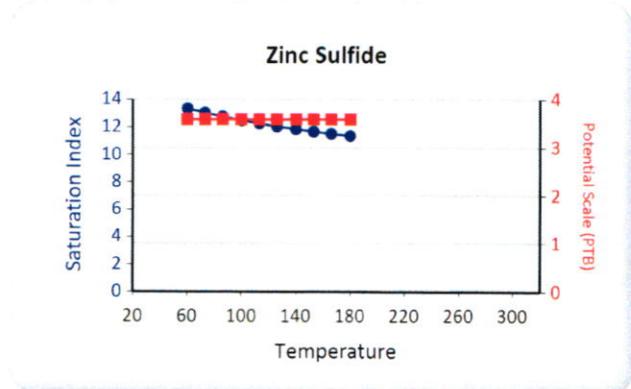
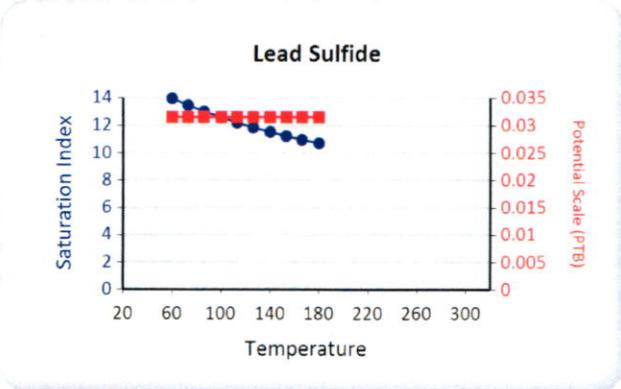
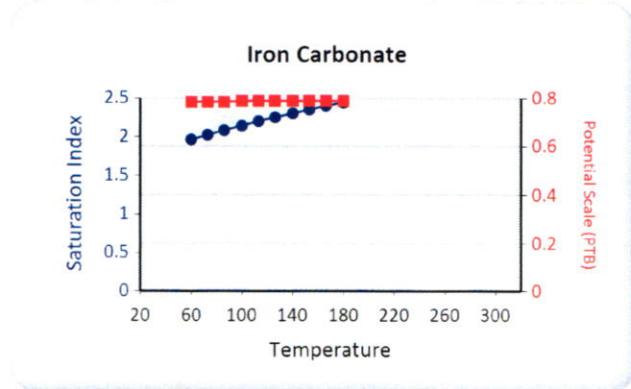
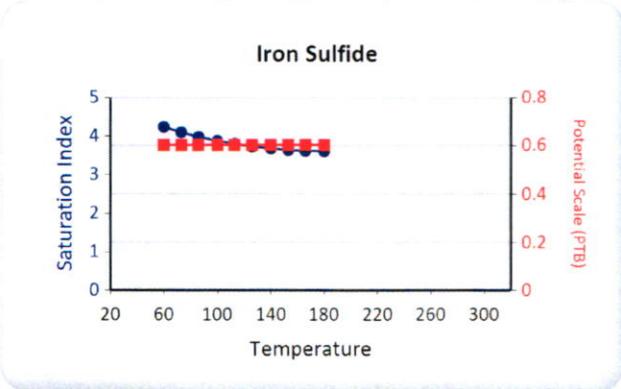
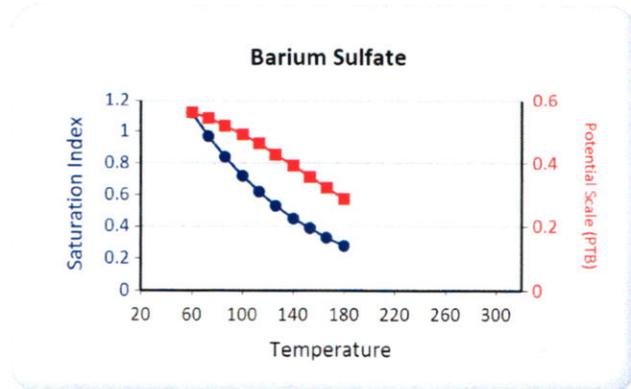
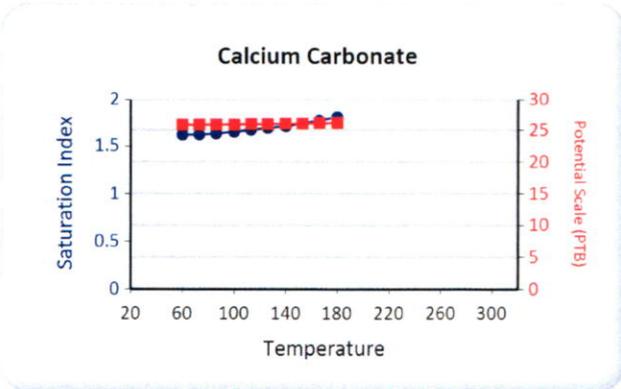
Notes:

(PTB = Pounds per Thousand Barrels)

Temp (°F)	PSI	Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4-2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.81	26.18	0.28	0.29	3.60	0.60	2.44	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.37	3.59
166	1779	1.77	26.13	0.33	0.32	3.61	0.60	2.40	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.52	3.59
153	1558	1.74	26.09	0.39	0.36	3.63	0.60	2.35	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.68	3.59
140	1338	1.71	26.05	0.45	0.39	3.67	0.60	2.30	0.79	0.00	0.00	0.00	0.00	0.00	0.00	11.86	3.59
126	1117	1.69	26.00	0.53	0.43	3.72	0.60	2.25	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.05	3.59
113	897	1.67	25.97	0.62	0.46	3.79	0.60	2.20	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.27	3.59
100	676	1.65	25.93	0.72	0.49	3.87	0.60	2.14	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.50	3.59
86	455	1.63	25.91	0.84	0.52	3.97	0.60	2.08	0.79	0.00	0.00	0.00	0.00	0.00	0.00	12.76	3.59
73	235	1.62	25.88	0.97	0.54	4.09	0.60	2.02	0.79	0.00	0.00	0.00	0.00	0.00	0.00	13.04	3.59
60	14	1.62	25.87	1.12	0.56	4.23	0.60	1.96	0.79	0.00	0.00	0.00	0.00	0.00	0.00	13.34	3.59

Temp (°F)	PSI	Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	3.15	4.62	10.72	0.03	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	3.04	4.62	10.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	2.92	4.62	11.24	0.03	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	2.79	4.62	11.54	0.03	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	2.65	4.62	11.86	0.03	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	2.50	4.61	12.21	0.03	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	2.34	4.61	12.60	0.03	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	2.17	4.60	13.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	1.99	4.58	13.46	0.03	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	1.79	4.55	13.95	0.03	0.00	0.00	0.00	0.00	0.00	0.00

Water Analysis Report



Water Analysis Report

Production Company: **PETROGLYPH OPERATING CO INC - EBUS**
 Well Name: **UTE TRIBAL 34-12D3 SATELLITE, DUCHE**
 Sample Point: **PLANT DISCHARGE**
 Sample Date: **4/21/2015**
 Sample ID: **WA-307067**

Sales Rep: **James Patry**
 Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from
 Brine Chemistry Consortium (Rice University)

Sample Specifics		Analysis @ Properties in Sample Specifics			
		Cations		Anions	
		mg/L		mg/L	
Test Date:	4/21/2015	Sodium (Na):	5277.36	Chloride (Cl):	7000.00
System Temperature 1 (°F):	60.00	Potassium (K):	65.03	Sulfate (SO4):	0.00
System Pressure 1 (psig):	14.70	Magnesium (Mg):	7.80	Bicarbonate (HCO3):	2196.00
System Temperature 2 (°F):	180.00	Calcium (Ca):	24.60	Carbonate (CO3):	
System Pressure 2 (psig):	2000.00	Strontium (Sr):	5.20	Acetic Acid (CH3COO)	
Calculated Density (g/ml):	1.0073	Barium (Ba):	12.37	Propionic Acid (C2H5COO)	
pH:	8.50	Iron (Fe):	0.34	Butanoic Acid (C3H7COO)	
Calculated TDS (mg/L):	14589.98	Zinc (Zn):	1.16	Isobutyric Acid ((CH3)2CHCOO)	
CO2 in Gas (%):		Lead (Pb):	0.04	Fluoride (F):	
Dissolved CO2 (mg/L):	0.00	Ammonia NH3:		Bromine (Br):	
H2S in Gas (%):		Manganese (Mn):	0.08	Silica (SiO2):	
H2S in Water (mg/L):	0.00				

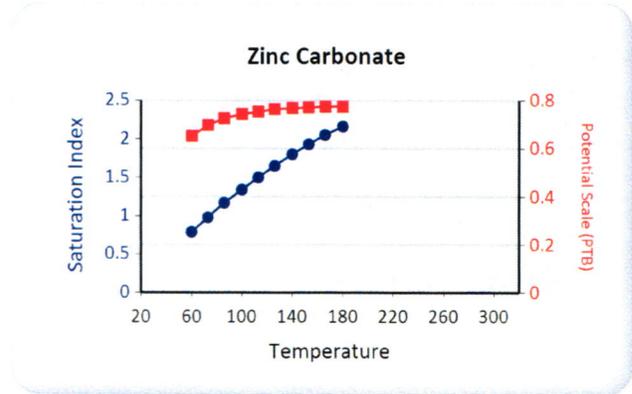
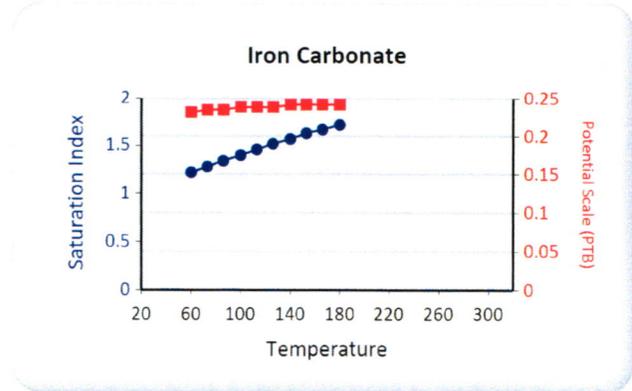
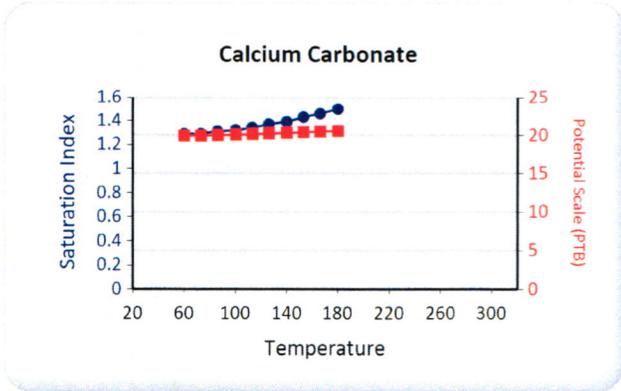
Notes:

(PTB = Pounds per Thousand Barrels)

Temp (°F)	PSI	Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	1.50	20.58	0.00	0.00	0.00	0.00	1.72	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	1.46	20.48	0.00	0.00	0.00	0.00	1.67	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	1.43	20.39	0.00	0.00	0.00	0.00	1.63	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	1.39	20.30	0.00	0.00	0.00	0.00	1.57	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	1.37	20.21	0.00	0.00	0.00	0.00	1.52	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	1.34	20.13	0.00	0.00	0.00	0.00	1.46	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	1.32	20.05	0.00	0.00	0.00	0.00	1.40	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	1.31	19.99	0.00	0.00	0.00	0.00	1.34	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	1.29	19.93	0.00	0.00	0.00	0.00	1.28	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	1.29	19.93	0.00	0.00	0.00	0.00	1.22	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Temp (°F)	PSI	Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
180	2000	0.00	0.00	0.00	0.00	0.00	0.00	2.16	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
166	1779	0.00	0.00	0.00	0.00	0.00	0.00	2.05	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
153	1558	0.00	0.00	0.00	0.00	0.00	0.00	1.93	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	1338	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126	1117	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
113	897	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	676	0.00	0.00	0.00	0.00	0.00	0.00	1.34	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	455	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73	235	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	14	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water Analysis Report



Units of Measurement: **Standard**

Water Analysis Report

Production Company: **PETROGLYPH OPERATING CO INC - EBUS**
Well Name: **UTE TRIBAL 18-09 INJ, DUCHESNE**
Sample Point: **WELLHEAD**
Sample Date: **1/7/2015**
Sample ID: **WA-297468**

Sales Rep: **James Patry**
Lab Tech: **Gary Winegar**

Scaling potential predicted using ScaleSoftPitzer from
Brine Chemistry Consortium (Rice University)

Sample Specifics		Analysis @ Properties in Sample Specifics			
Test Date:	1/14/2015	<i>Cations</i>		<i>Anions</i>	
System Temperature 1 (°F):	160	<i>mg/L</i>		<i>mg/L</i>	
System Pressure 1 (psig):	1300	Sodium (Na):	1670.36	Chloride (Cl):	3000.00
System Temperature 2 (°F):	80	Potassium (K):	33.23	Sulfate (SO4):	216.00
System Pressure 2 (psig):	15	Magnesium (Mg):	50.46	Bicarbonate (HCO3):	1220.00
Calculated Density (g/ml):	1.0015	Calcium (Ca):	92.22	Carbonate (CO3):	
pH:	6.80	Strontium (Sr):	4.96	Acetic Acid (CH3COO)	
Calculated TDS (mg/L):	6315.93	Barium (Ba):	3.41	Propionic Acid (C2H5COO)	
CO2 in Gas (%):		Iron (Fe):	0.66	Butanoic Acid (C3H7COO)	
Dissolved CO2 (mg/L):	0.00	Zinc (Zn):	0.11	Isobutyric Acid ((CH3)2CHCOO)	
H2S in Gas (%):		Lead (Pb):	0.02	Fluoride (F):	
H2S in Water (mg/L):	5.00	Ammonia NH3:		Bromine (Br):	
		Manganese (Mn):	0.08	Silica (SiO2):	24.42

Notes:
B=3.29 Al=0 Li=1.01

(PTB = Pounds per Thousand Barrels)

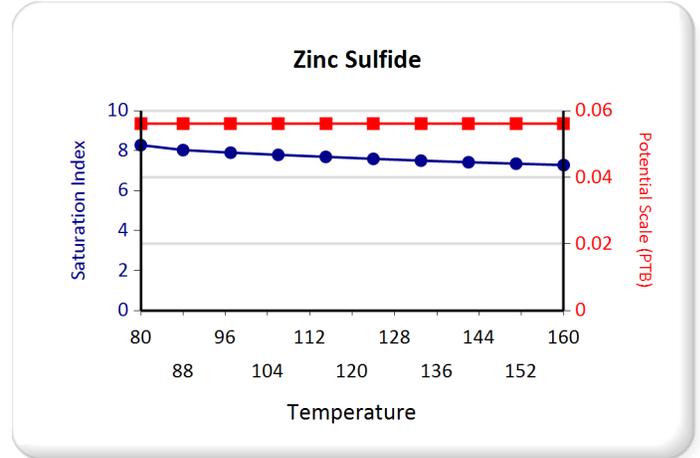
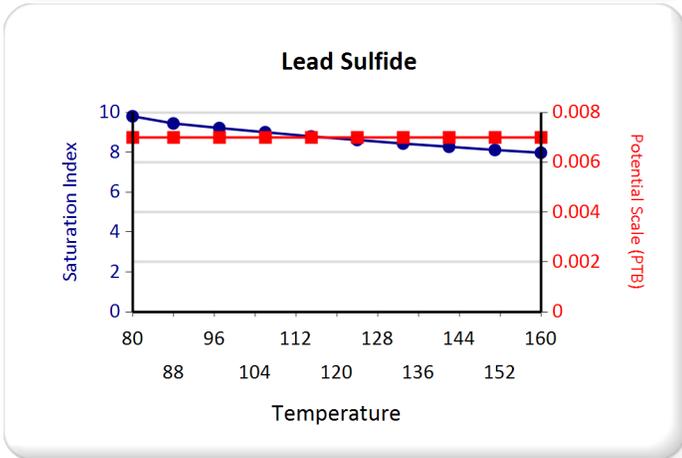
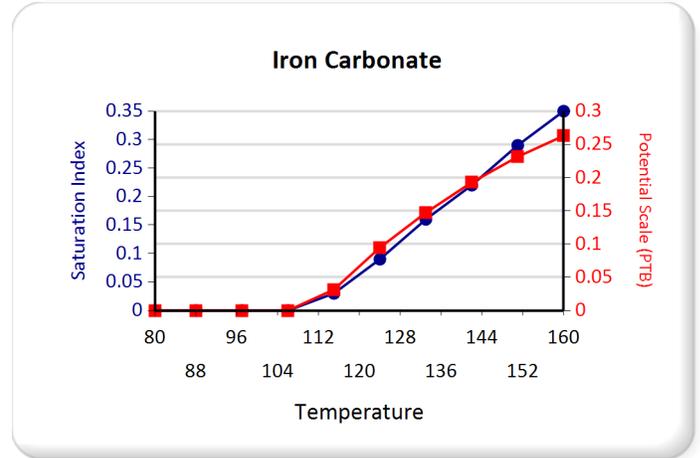
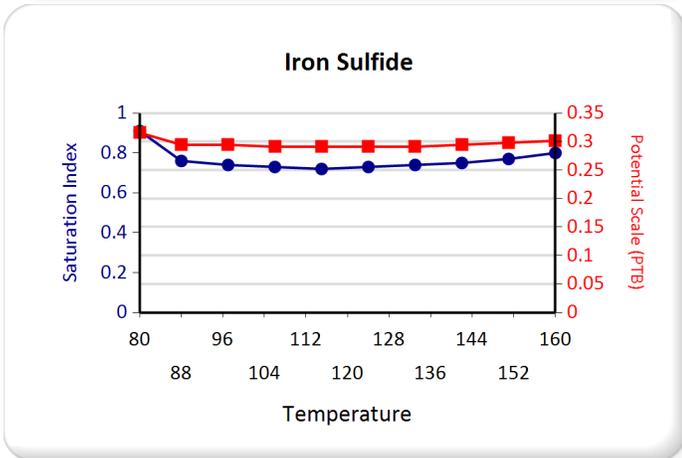
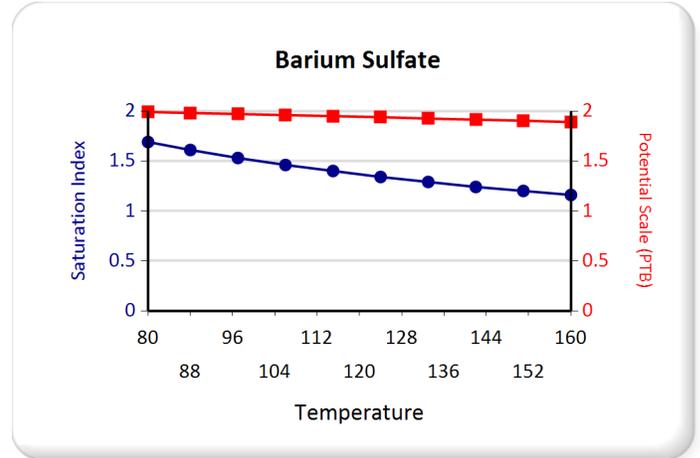
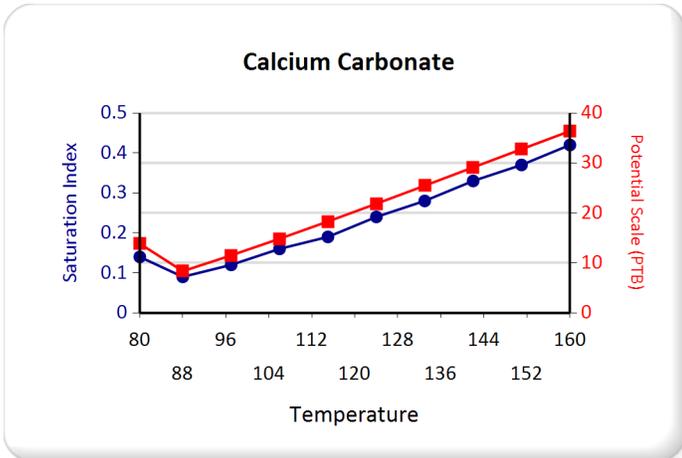
Temp (°F)	PSI	Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO4·2H2O		Celestite SrSO4		Halite NaCl		Zinc Sulfide	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.14	13.85	1.69	1.99	0.91	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.28	0.06
88.00	157.00	0.09	8.33	1.61	1.98	0.76	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.03	0.06
97.00	300.00	0.12	11.50	1.53	1.97	0.74	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.90	0.06
106.00	443.00	0.16	14.83	1.46	1.96	0.73	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.79	0.06
115.00	585.00	0.19	18.29	1.40	1.95	0.72	0.29	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	7.69	0.06
124.00	728.00	0.24	21.84	1.34	1.94	0.73	0.29	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	7.59	0.06
133.00	871.00	0.28	25.45	1.29	1.92	0.74	0.29	0.16	0.15	0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.06
142.00	1014.00	0.33	29.11	1.24	1.91	0.75	0.29	0.22	0.19	0.00	0.00	0.00	0.00	0.00	0.00	7.42	0.06
151.00	1157.00	0.37	32.75	1.20	1.90	0.77	0.30	0.29	0.23	0.00	0.00	0.00	0.00	0.00	0.00	7.35	0.06
160.00	1300.00	0.42	36.38	1.16	1.89	0.80	0.30	0.35	0.26	0.00	0.00	0.00	0.00	0.00	0.00	7.28	0.06

Temp (°F)	PSI	Hemihydrate CaSO4~0.5H2O		Anhydrate CaSO4		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
		SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
80.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.81	0.01	0.00	0.00	0.00	0.00	0.00	0.00
88.00	157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.45	0.01	0.00	0.00	0.00	0.00	0.00	0.00
97.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.22	0.01	0.00	0.00	0.00	0.00	0.00	0.00
106.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
115.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.80	0.01	0.00	0.00	0.00	0.00	0.00	0.00
124.00	728.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.62	0.01	0.00	0.00	0.00	0.00	0.00	0.00
133.00	871.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.44	0.01	0.00	0.00	0.00	0.00	0.00	0.00
142.00	1014.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.28	0.01	0.00	0.00	0.00	0.00	0.00	0.00
151.00	1157.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00
160.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.98	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Water Analysis Report

These scales have positive scaling potential under initial temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Zinc Sulfide Lead Sulfide

These scales have positive scaling potential under final temperature and pressure: Calcium Carbonate Barium Sulfate Iron Sulfide Iron Carbonate Zinc Sulfide Lead Sulfide



ATTACHMENT NO. 6

COMPLETION DATA FOR ALL WELLS IN THE AOR

Well Completion Data

Ute Tribal 17-12

Well	Surface Casing				Production Casing			
	Size (inches)	Depth (ft KB)	Cement Amount (sx)	Cement Top	Size (inches)	Depth (ft KB)	Cement Amount (sx)	Estimated Cement Top
Ute Tribal 17-12	8-5/8	412	250	surface	5-1/2	5866	455	2250
Ute Tribal 17-05	8-5/8	402	250	surface	5-1/2	6106	355	3030
Ute Tribal 17-12F	8-5/8	550	350	surface	5-1/2	6039	840	surface
Ute Tribal 17-12M	8-5/8	550	360	surface	5-1/2	6066	820	surface
Ute Tribal 18-09	8-5/8	395	225	surface	5-1/2	5700	1200	surface
Ute Tribal 18-16J	8-5/8	500	350	surface	5-1/2	6100	901	surface

ATTACHMENT NO. 7

CBL FOR THE UIC WELL

HALLIBURTON

Schlumberger

CEMENT BOND LOG

County DUCHESNE Field ANTELOPE CREEK Location NW 1/4 Well UTE TRIBAL #1712 Company PETROGLYPH OPERATING COMPANY		COMPANY PETROGLYPH OPERATING COMPANY WELL UTE TRIBAL #1712 FIELD ANTELOPE CREEK COUNTY DUCHESNE STATE UTAH		Location NW 1/4 Section 11 Twp. 11N Range 11W Other Services	
Permanent Datum	91	Elev. 9081	Elev. A B		
Log Measured From	91	Draw From Bottom	D1	91.1.19	
Drilling Measured From	KIP				
Date	04 NOV 1996	Casing Fluid	Water		
Run No.	ONE	Fluid Level			
Depth-Driller	4940	Max. Rec. Temp.	N/A		
Depth-Logger	5200	Fst. Cement Top	41		
Btm. Log Interval	4970	Unit	District	111	N/A
Top Log Interval	5100	Recorded By		1 Mile	
Open Hole Size	8 1/2	Witnessed By		M. S. N.	
CASING REC.	Size	Wt./FT	Grade	Type Joint	Top
Surface String	8 1/2				Bottom
Prot. String					
Prod. String					
Liner					
PRIMARY CEMENTING DATA					
STRING	Surface	Protection	Production		Inner
Vol. of Cement	CEMENT				
Type of Cement	LATA				
Additive	N/A				
Retarder	CN				
Wt. of slurry	TOP ALLOY				
Water loss					
Type fluid in csg.					
Fluid wt.					

REMARKS

DEPTH REF SWH LOT 10 18 96
 END OF CEMENT AT 2400
 SHORT JOINT AT FOOTING
 5542-5576
 3742-3769
 3717-3742

CREW BLOOM

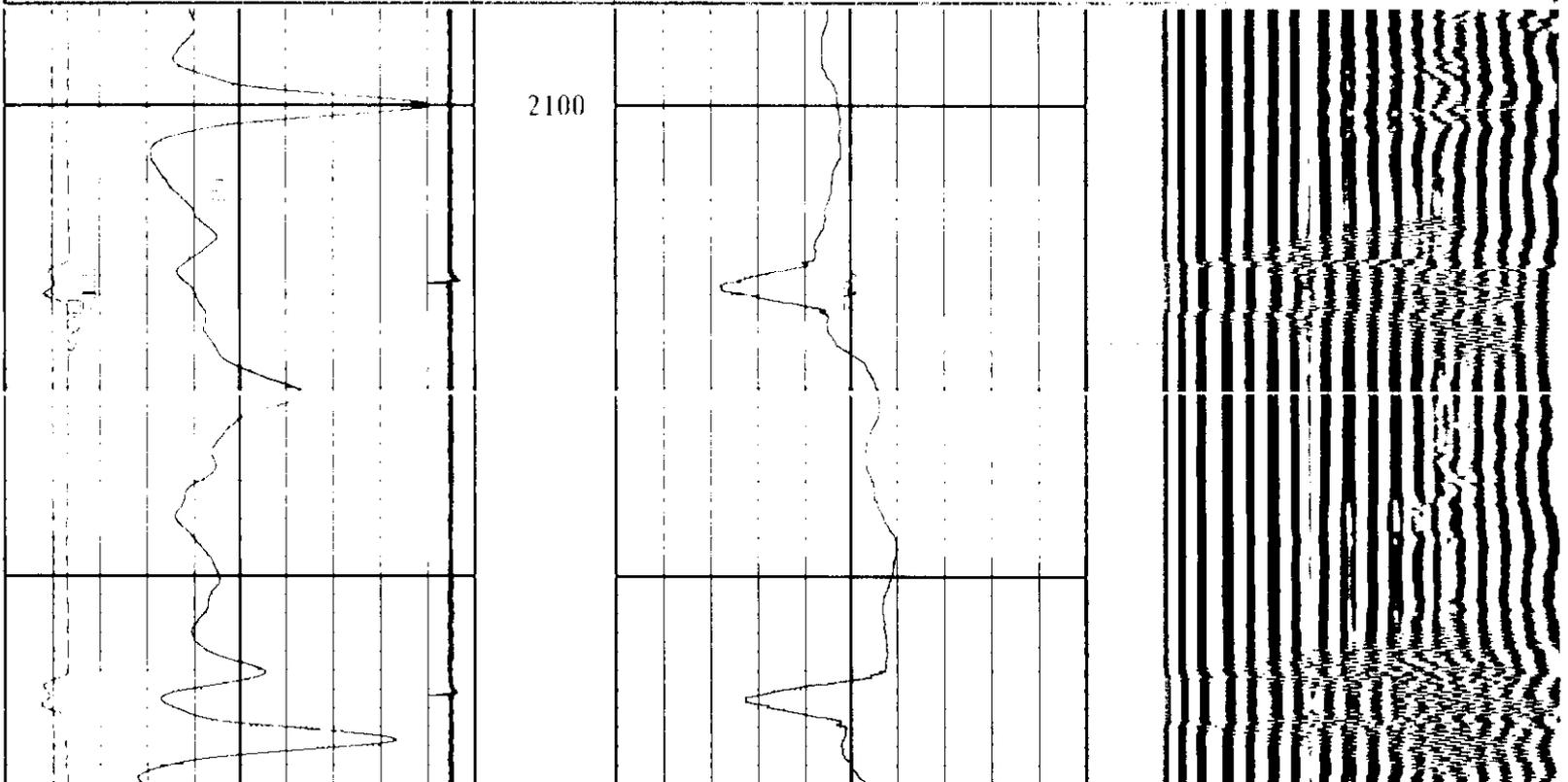
THANK YOU FOR USING SCHLUMBERGER!

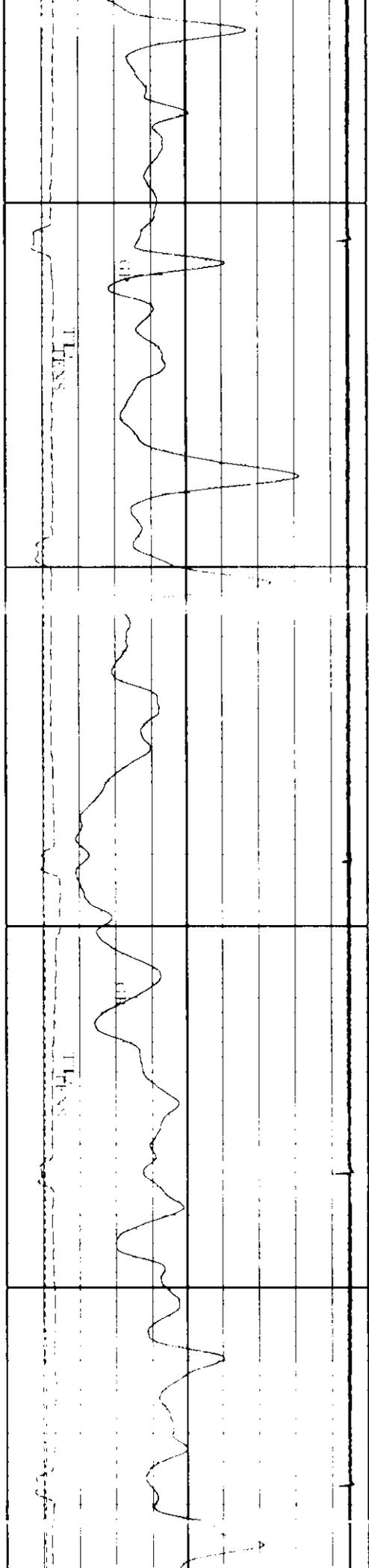
Software Version UX126
 Logging Pass Start Depth 5726.9 ft
 Logging Pass Stop Depth 2089.6 ft

Pass No 2
 Job Name 1000000

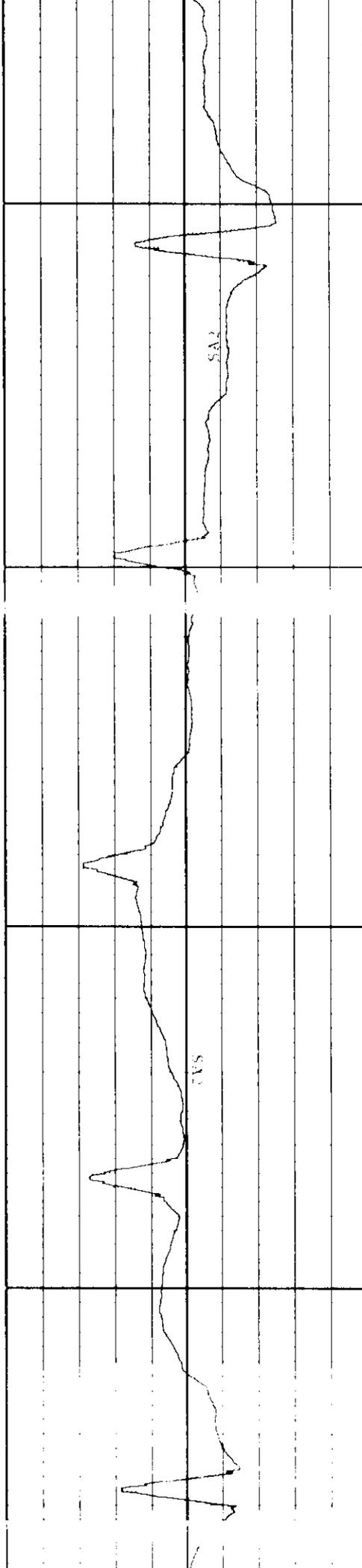
SCALE CHANGE REPORT
 NO SCALE CHANGES THIS FILE

-250	CCL (LINE)	250				
0	GR (LINE)	150				
270	TT2 (DASH)	170	0	ASA2 (DASH)	20	
0	TENS (DOT)	4000	0	SA2 (LINE)	100	200 VDL (LINE) 1200

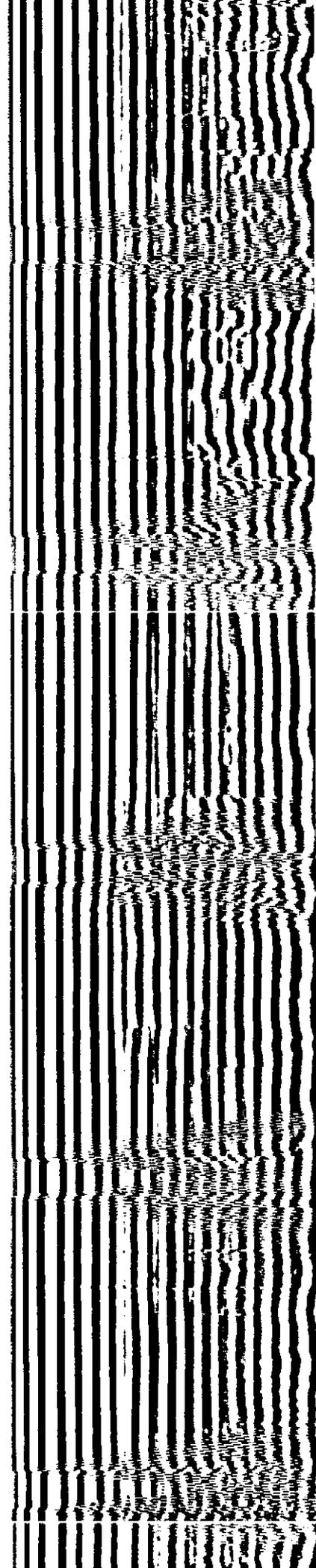




2200



2300

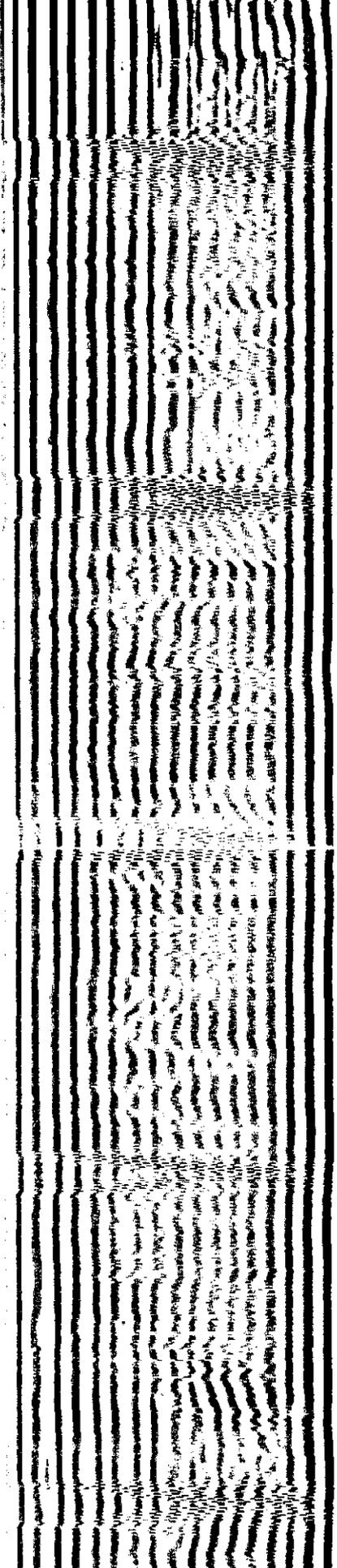
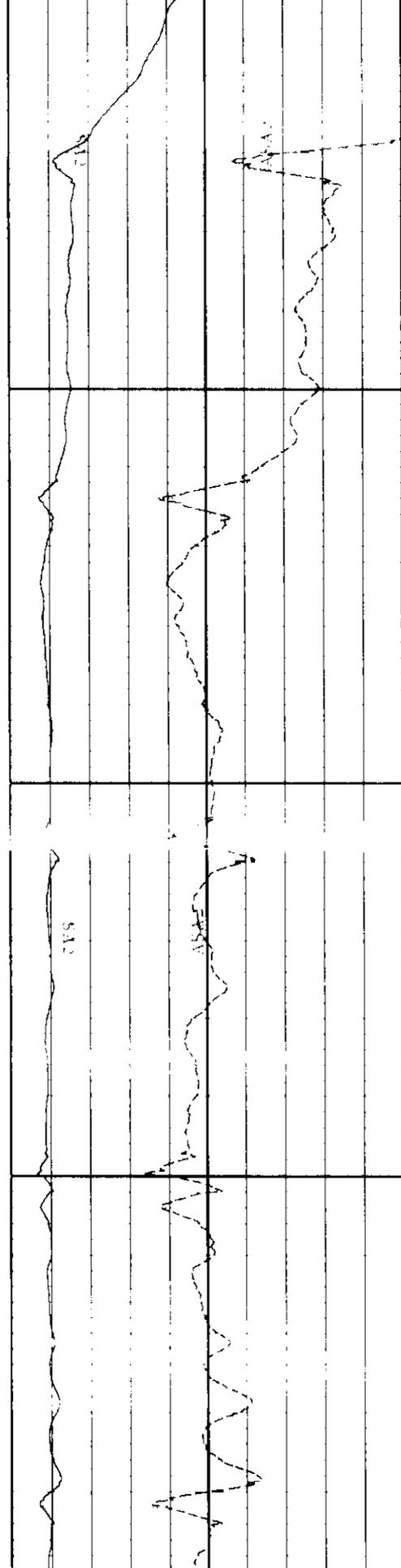
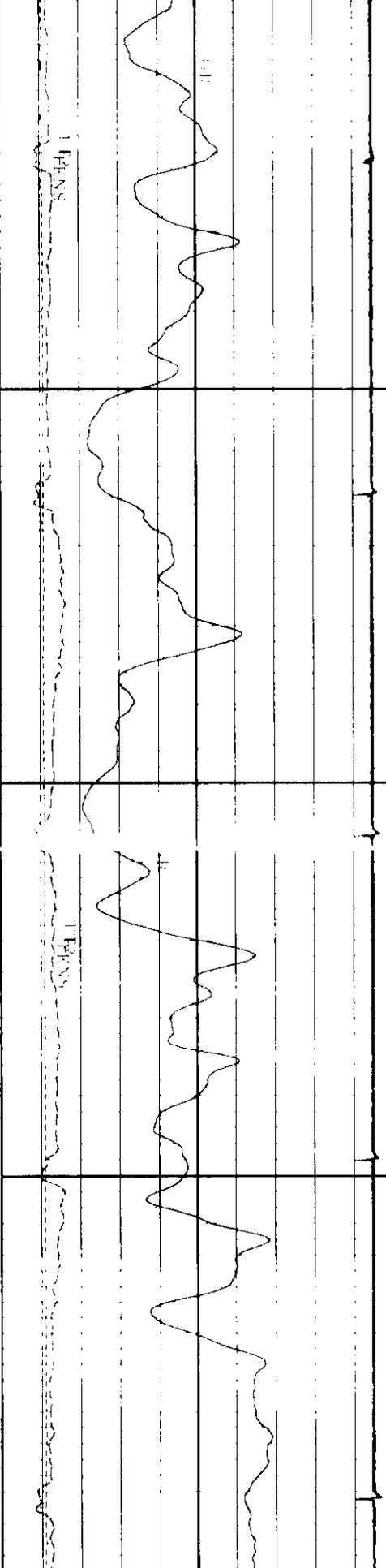


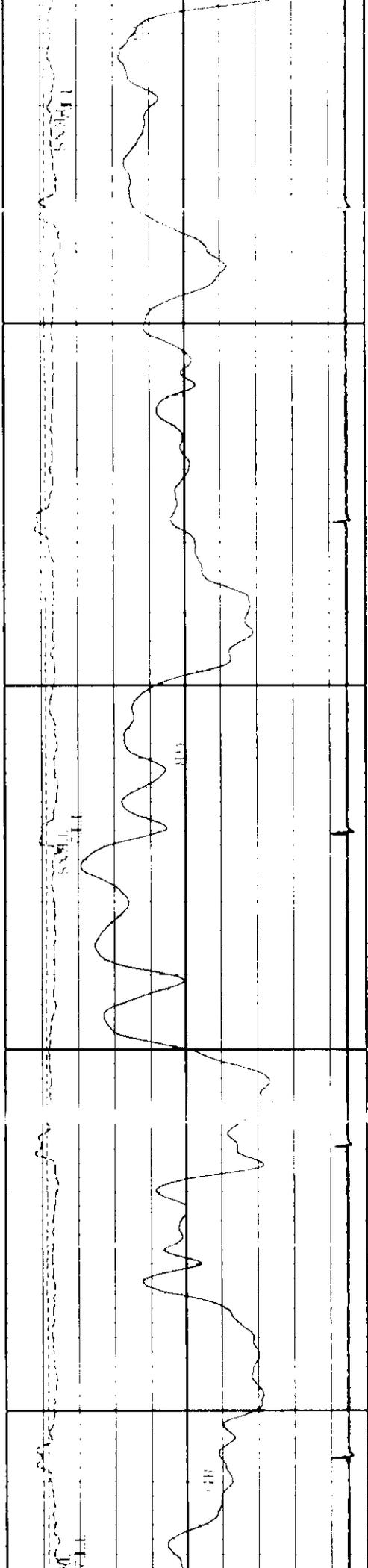
EST TOP OF CEMENT

2400

2500

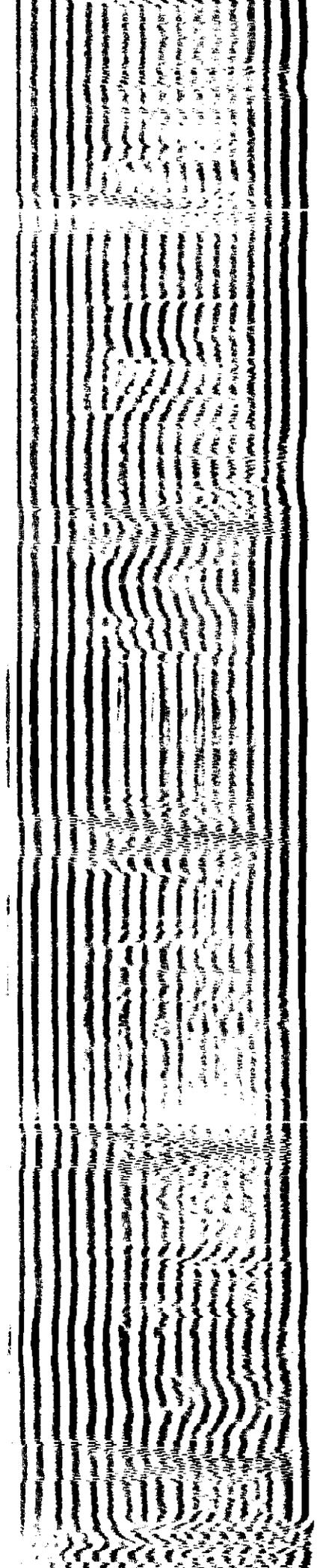
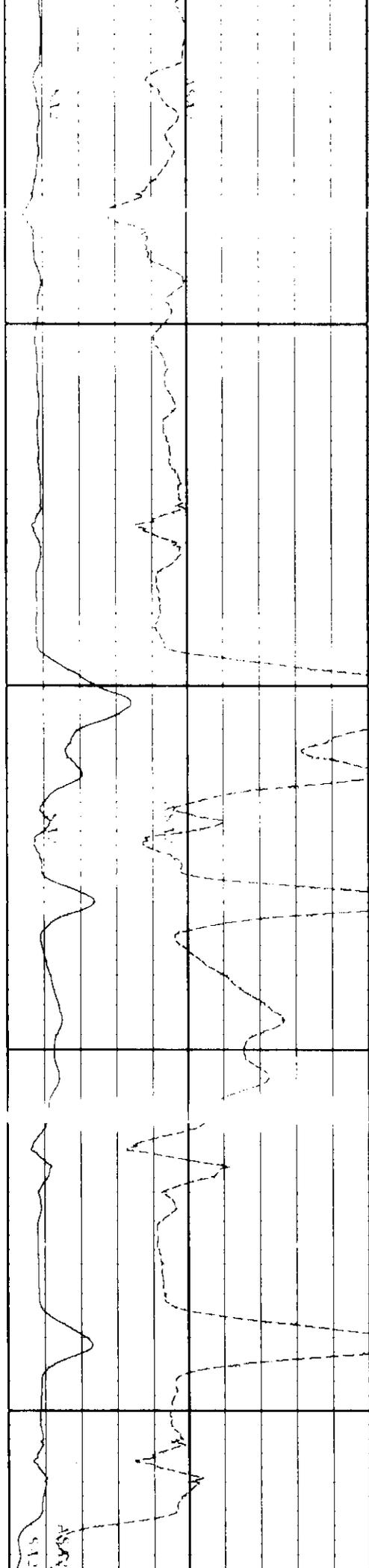
2600

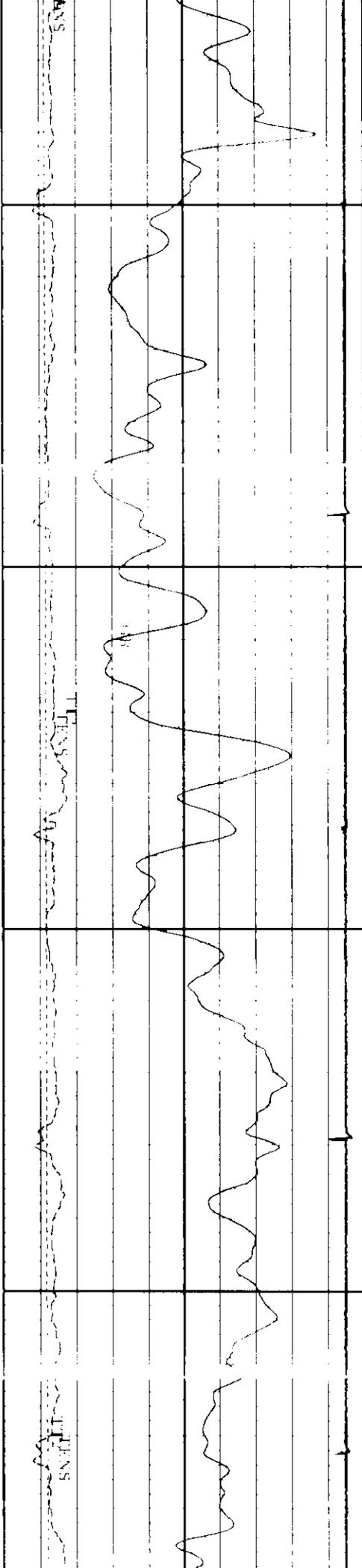




2700

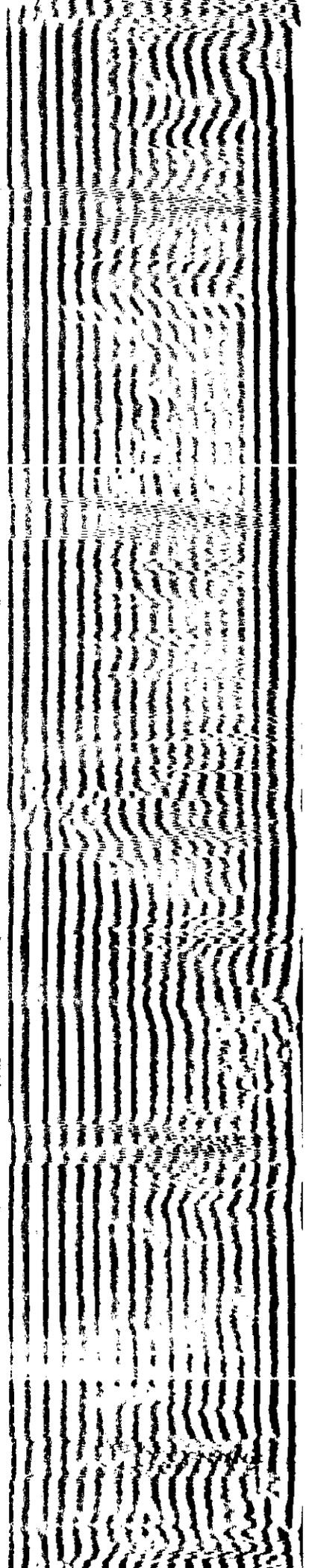
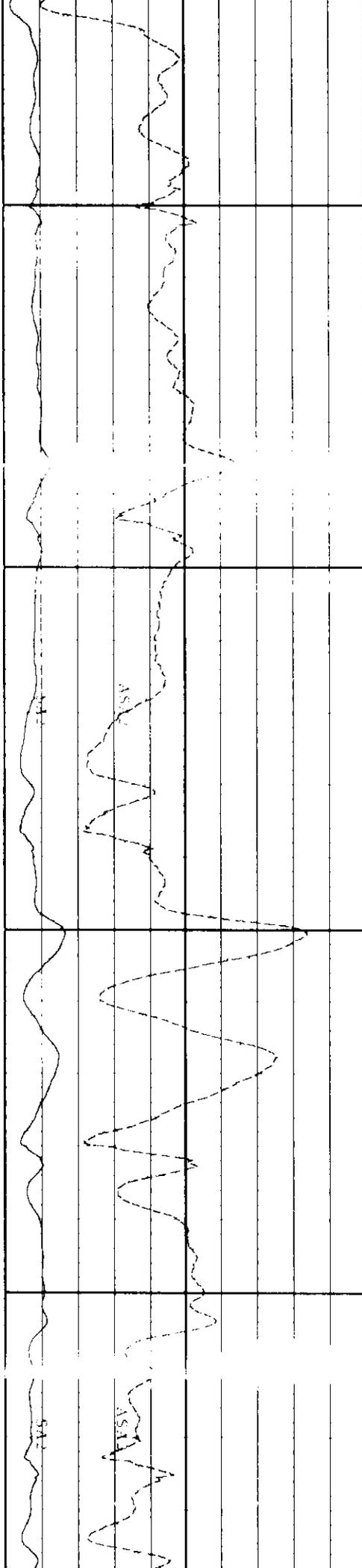
2800

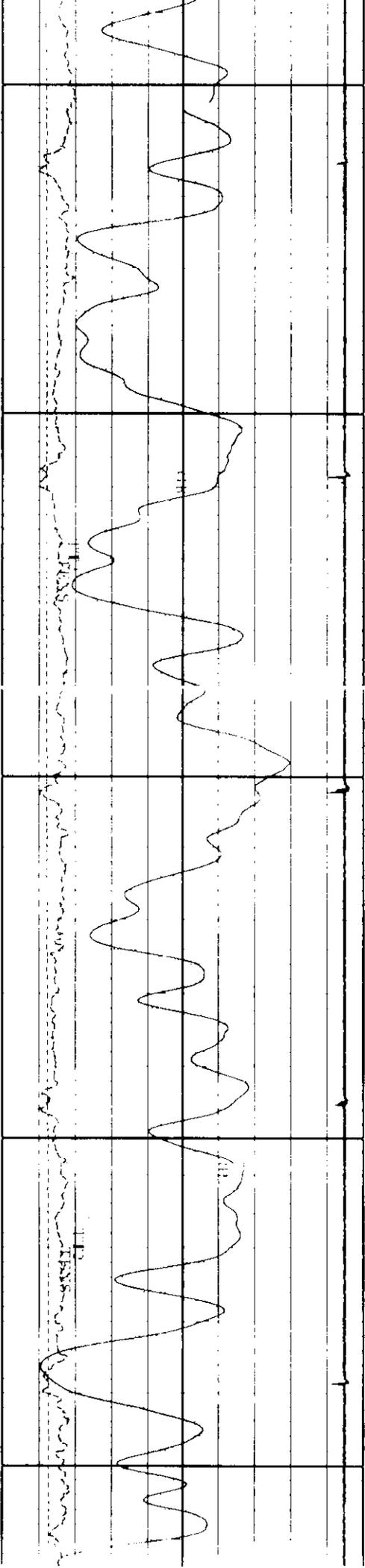




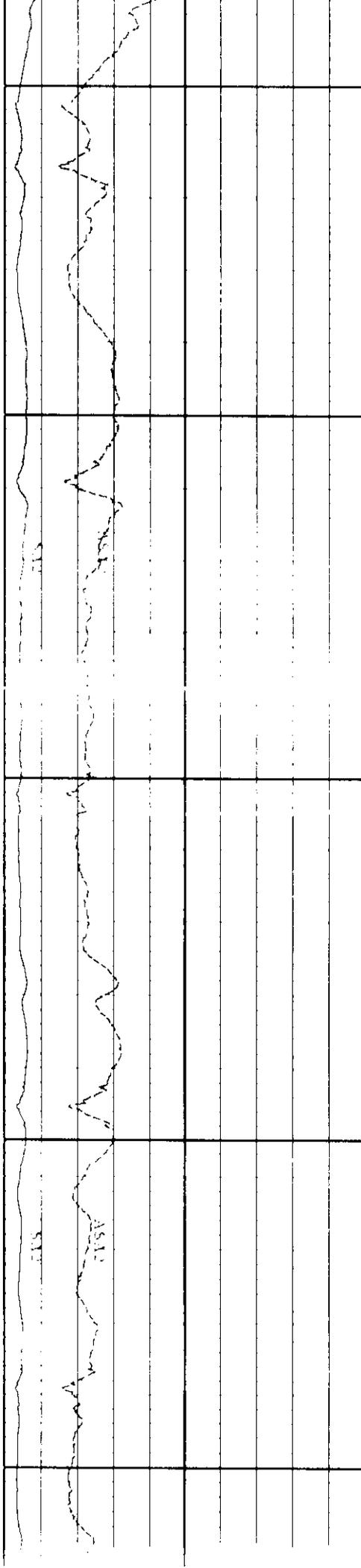
2900

3000

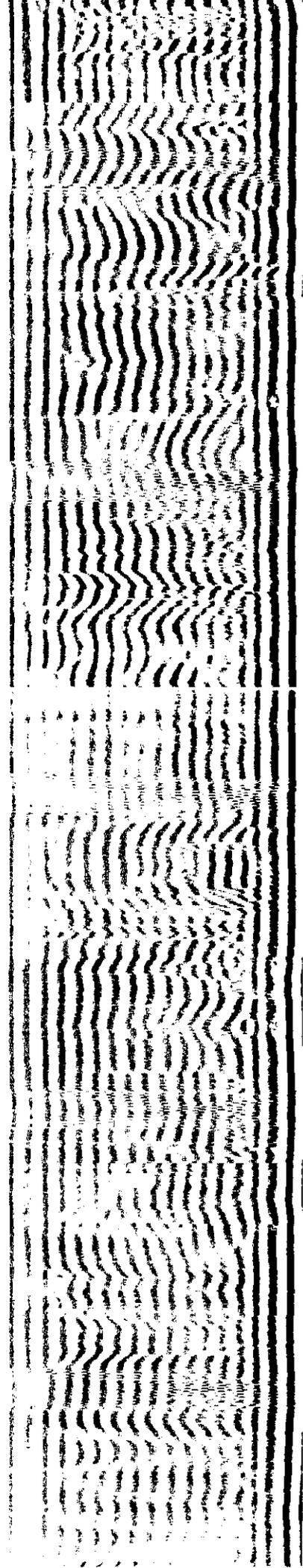


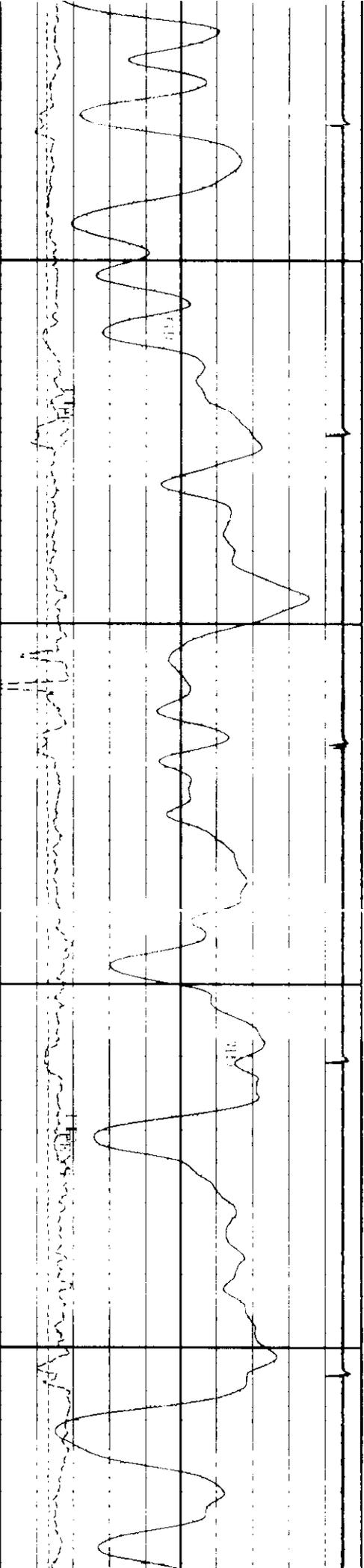


3100



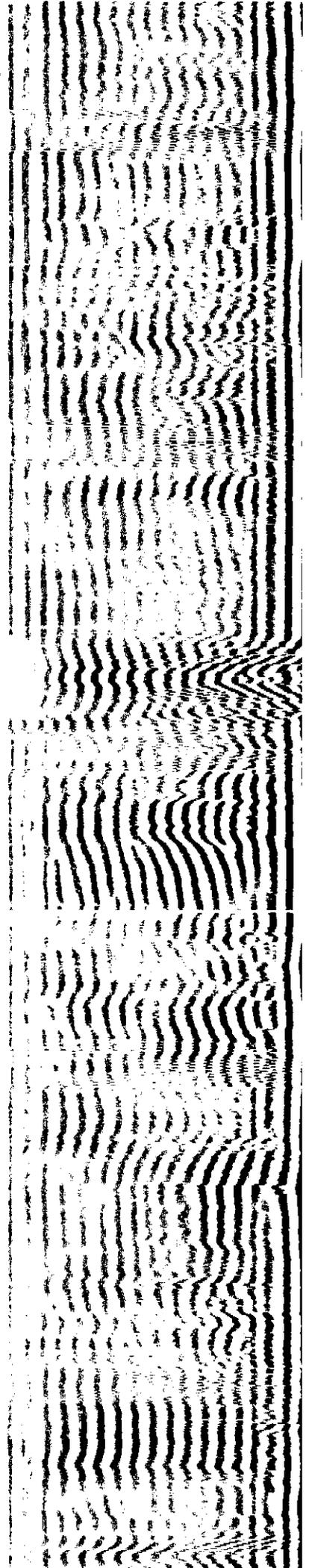
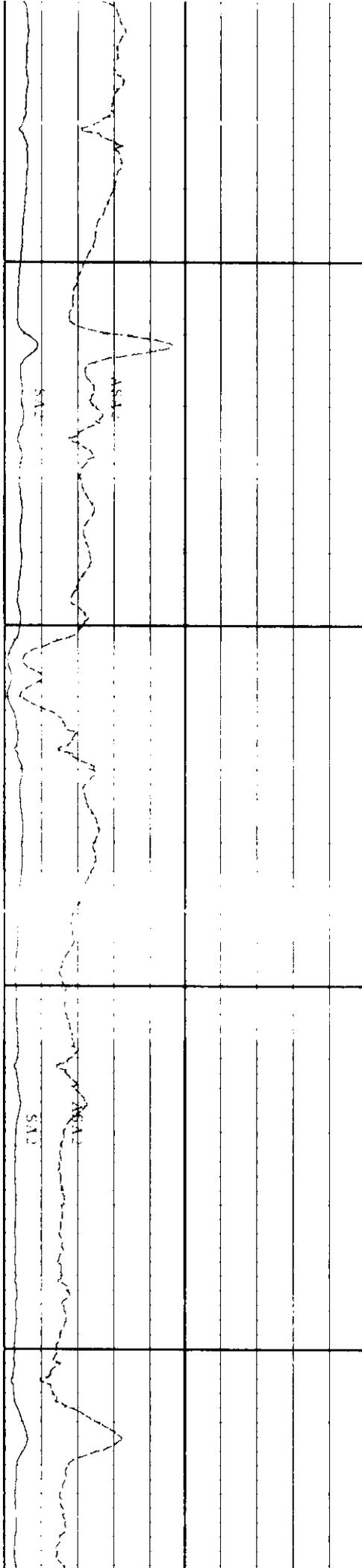
3200

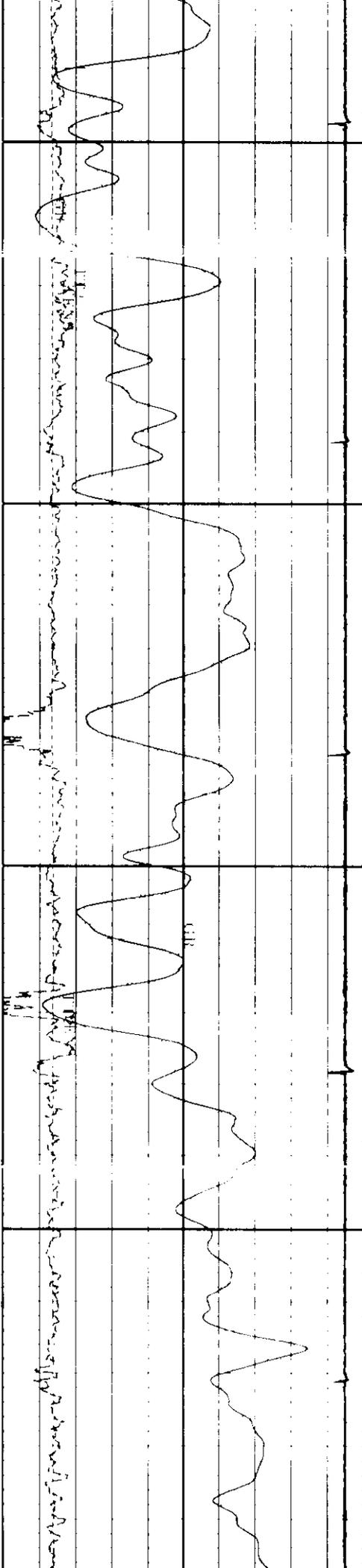




3300

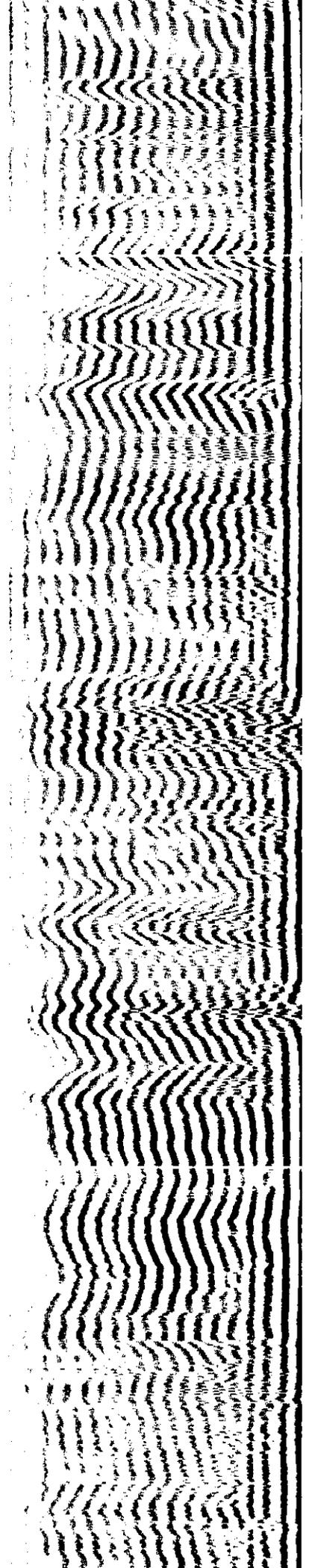
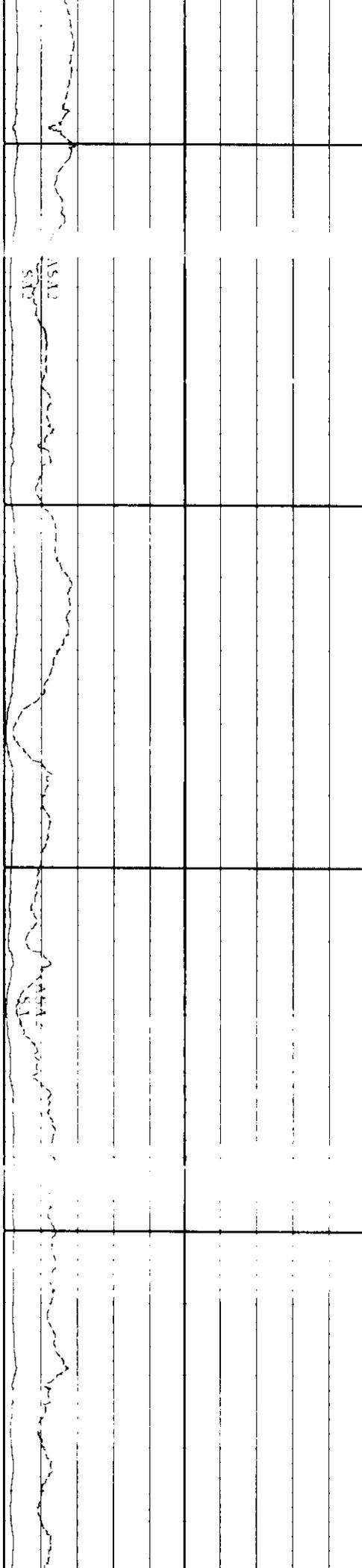
3400



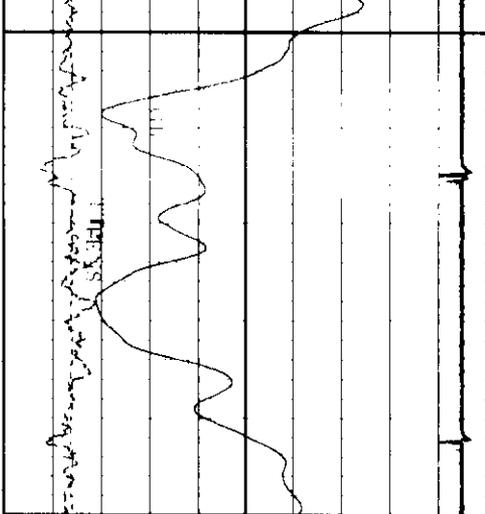


3500

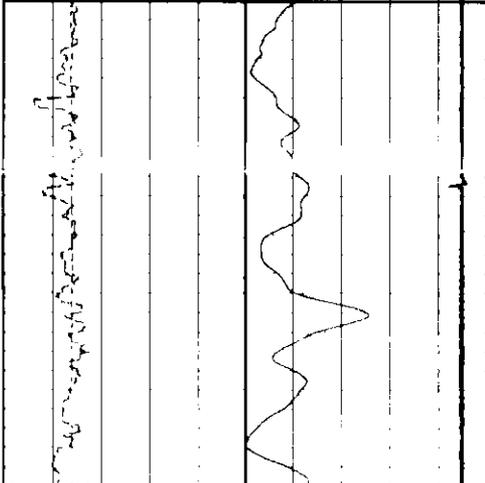
3600



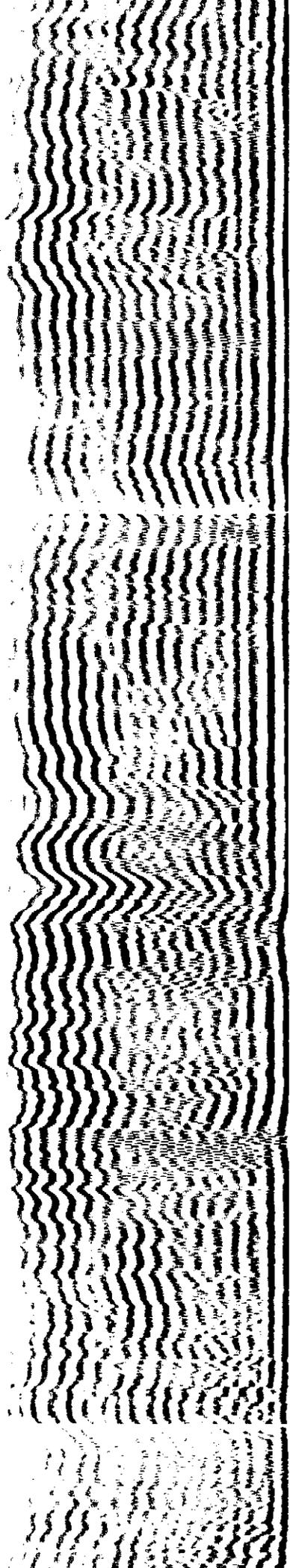
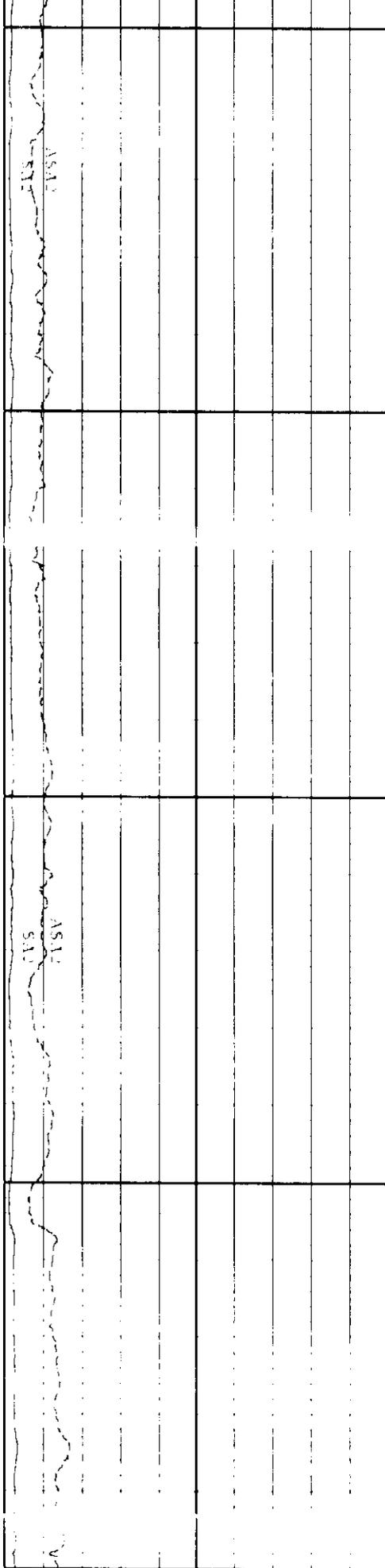
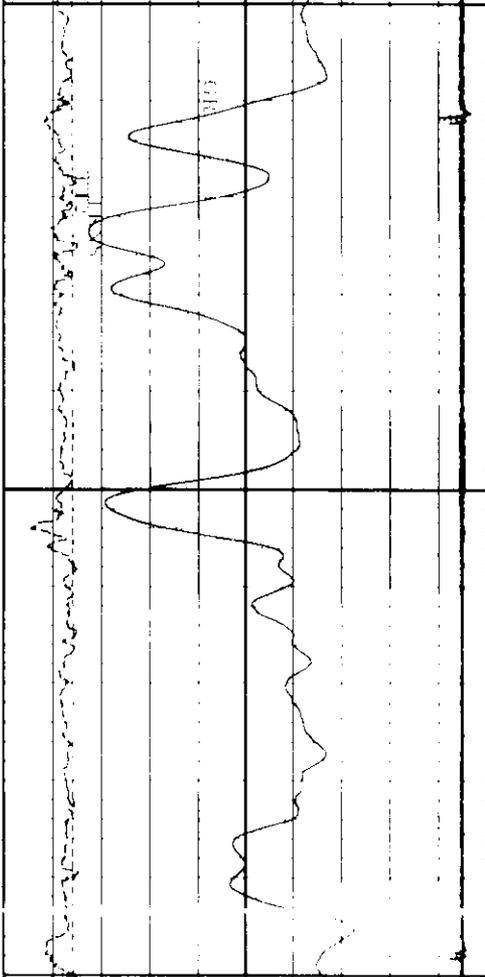
3700

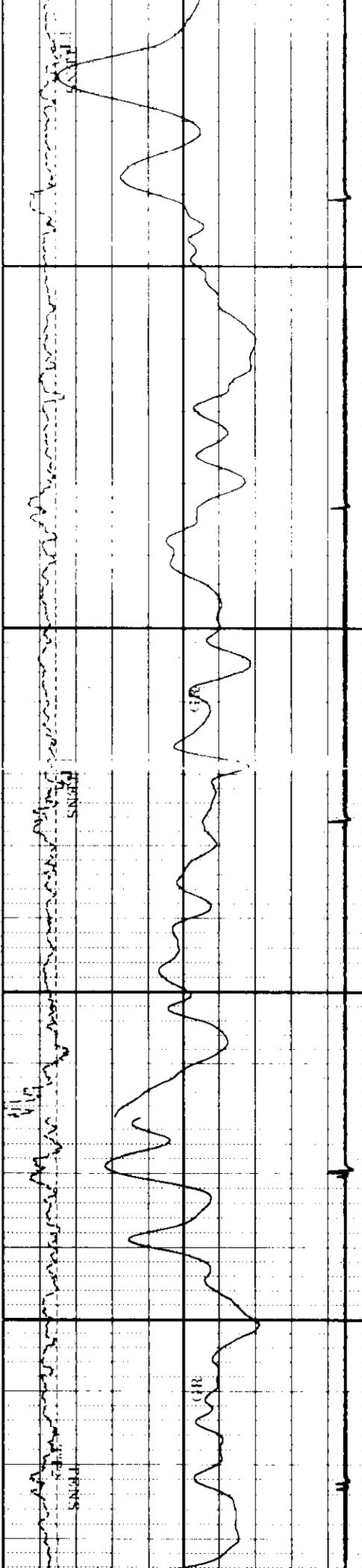


3800



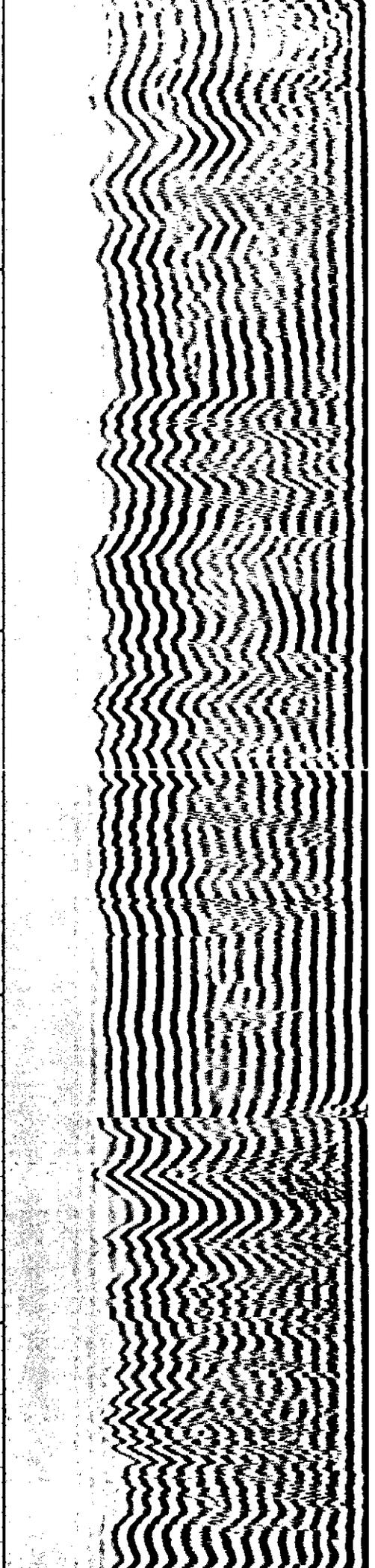
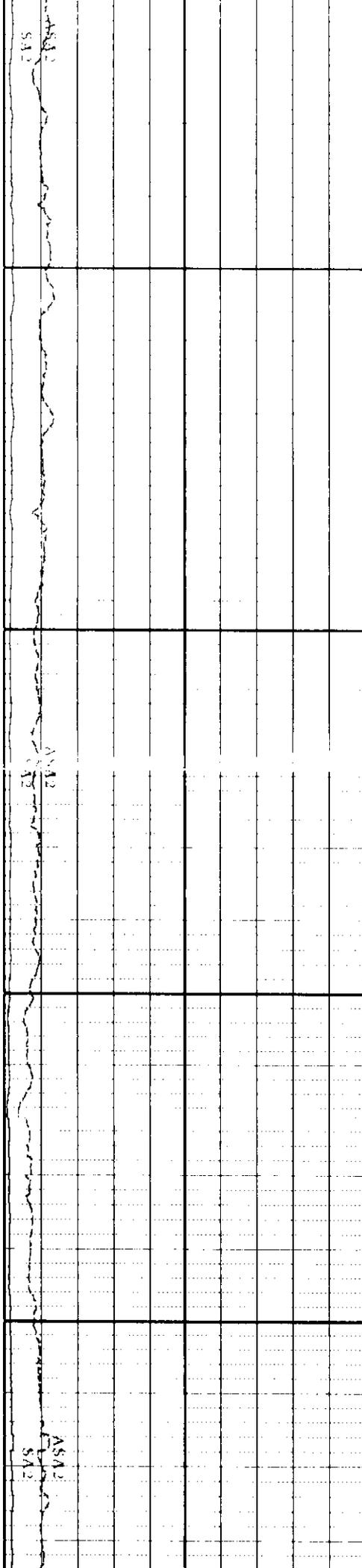
3900

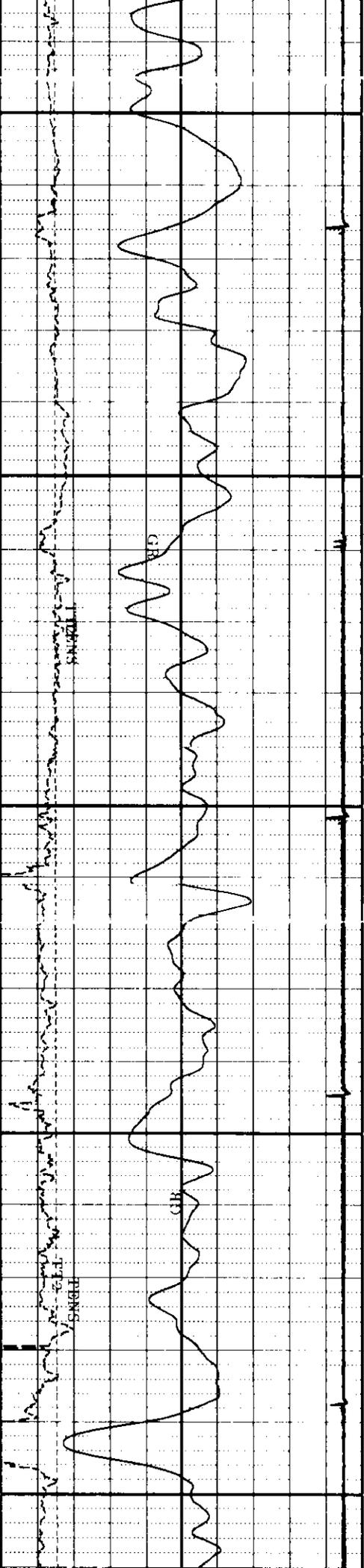




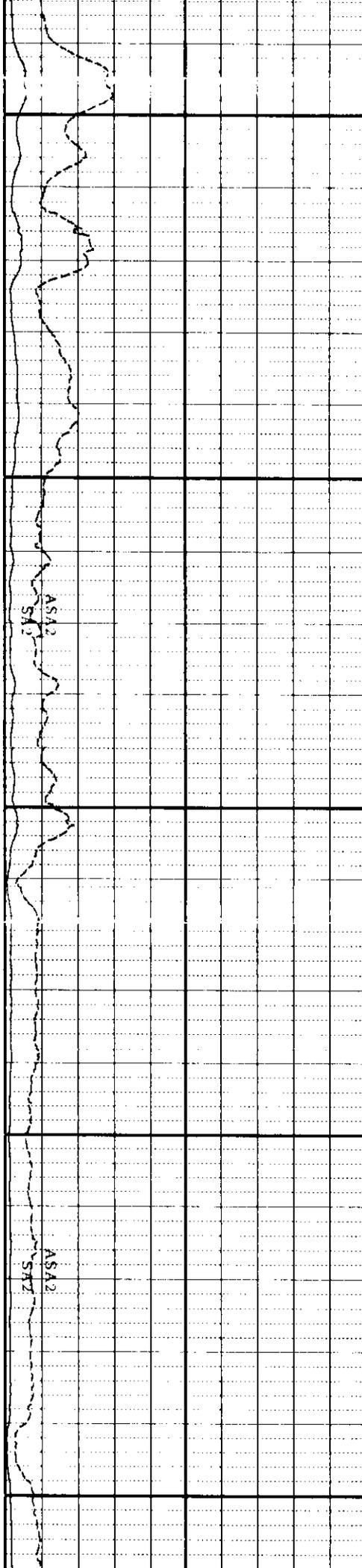
4000

4100



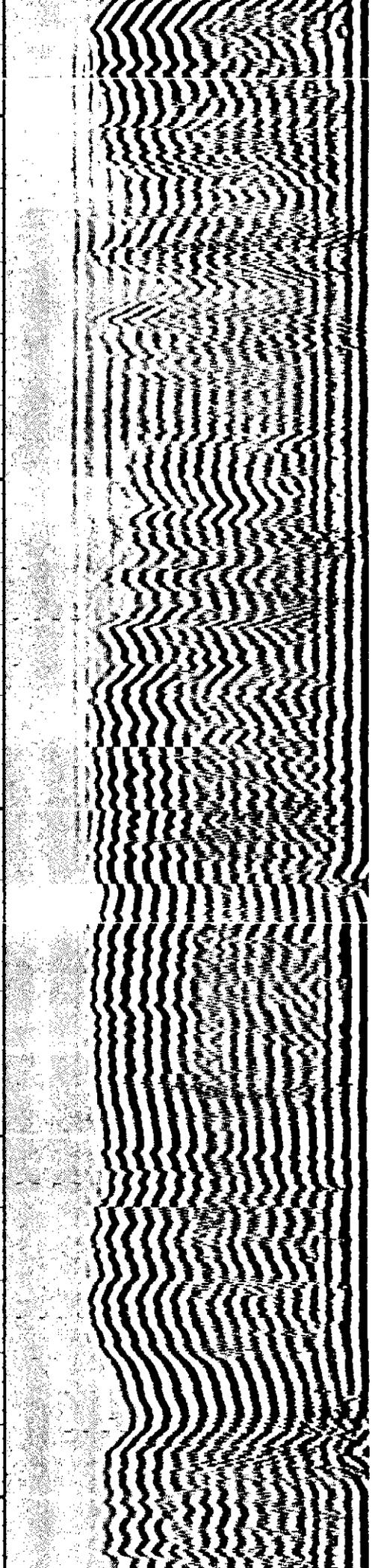


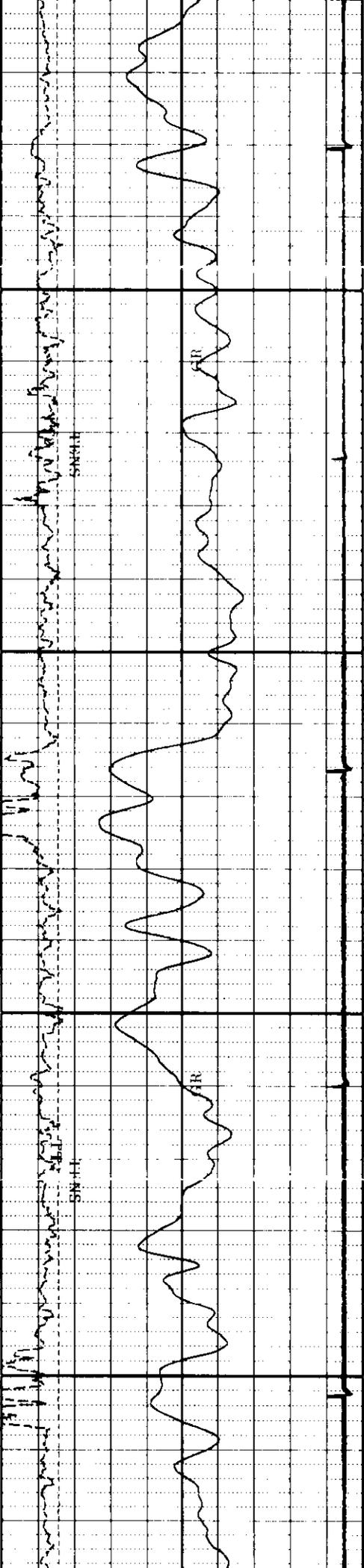
4200



4300

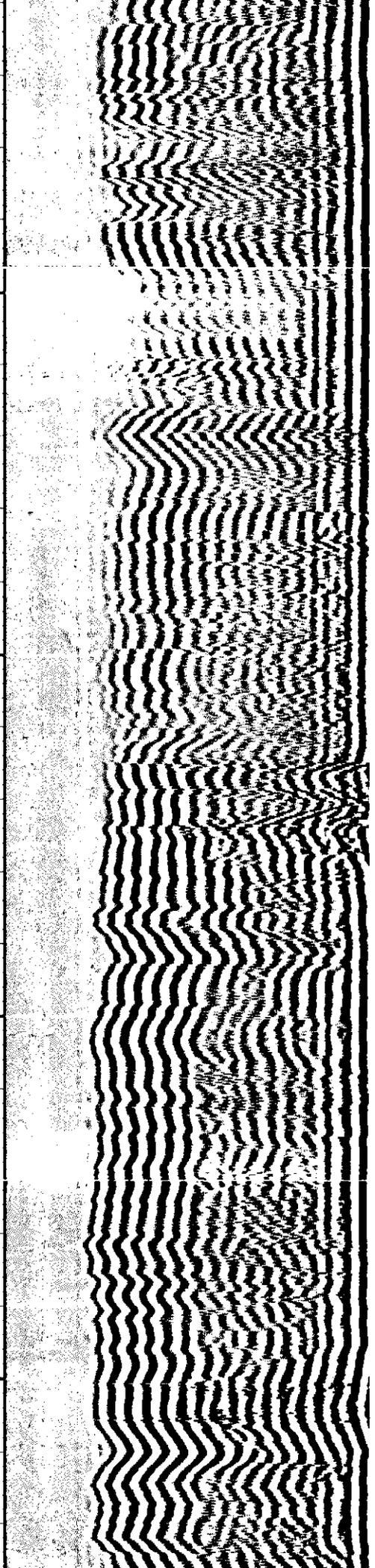
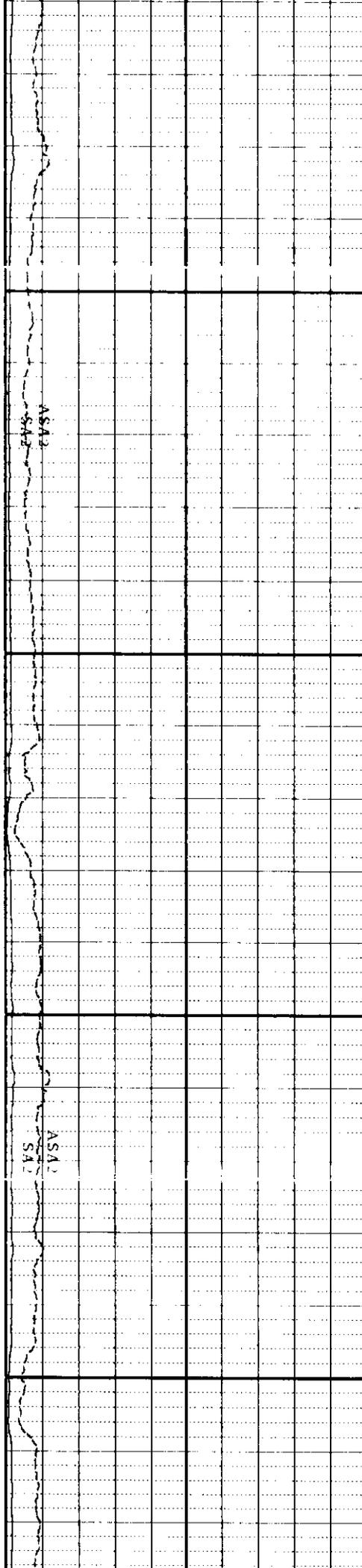
ASA2
SAZ

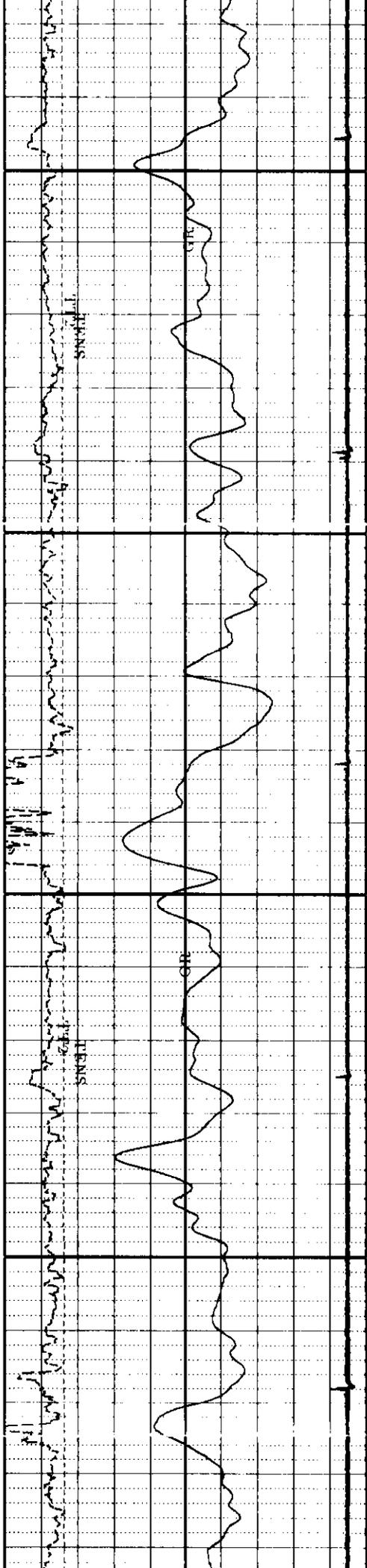




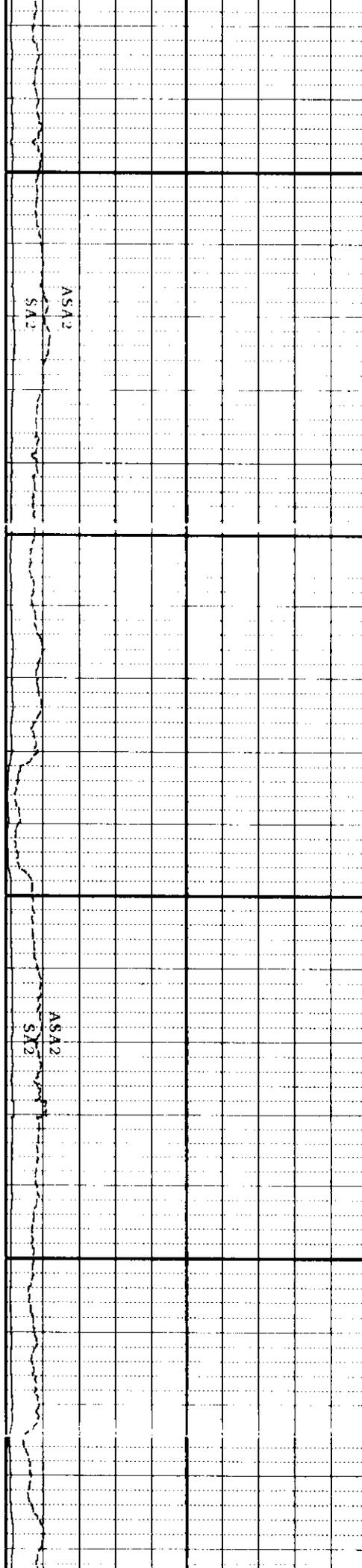
4400

4500

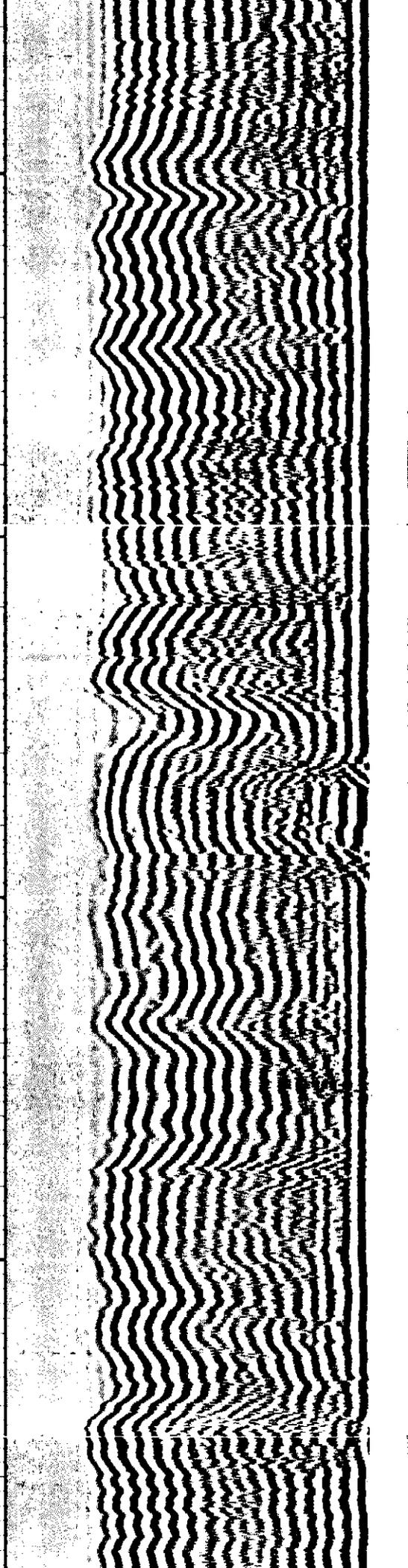


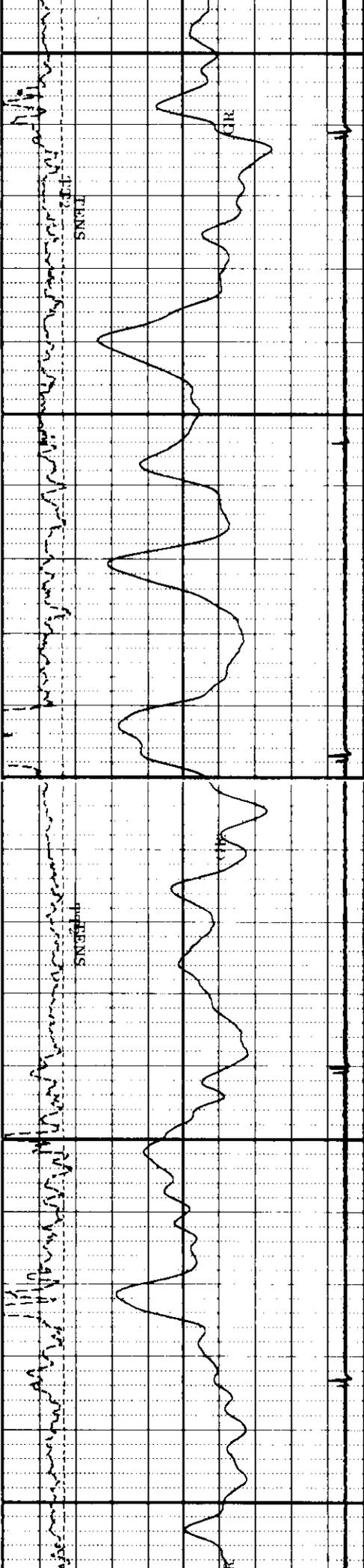


4600



4700

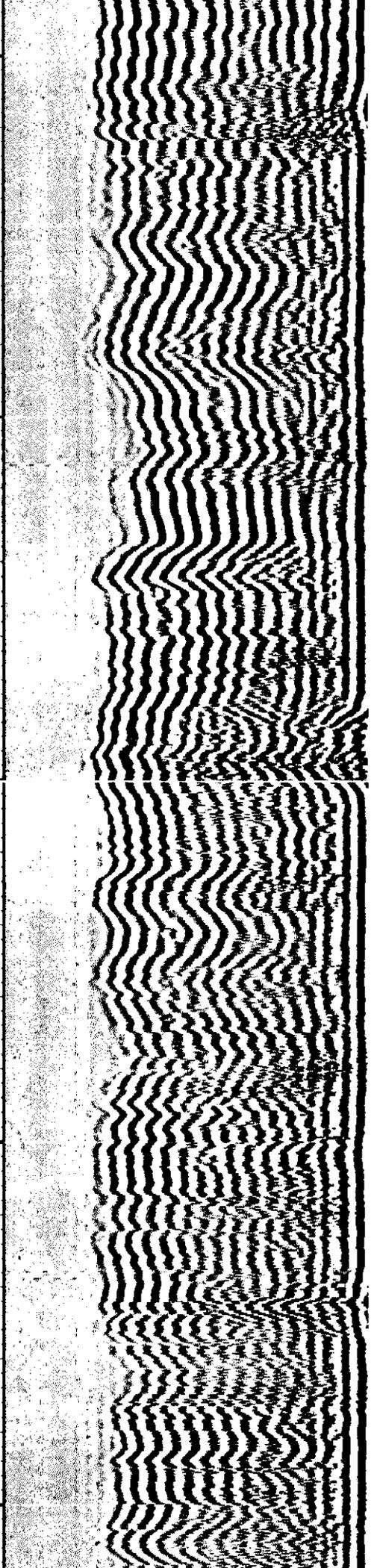
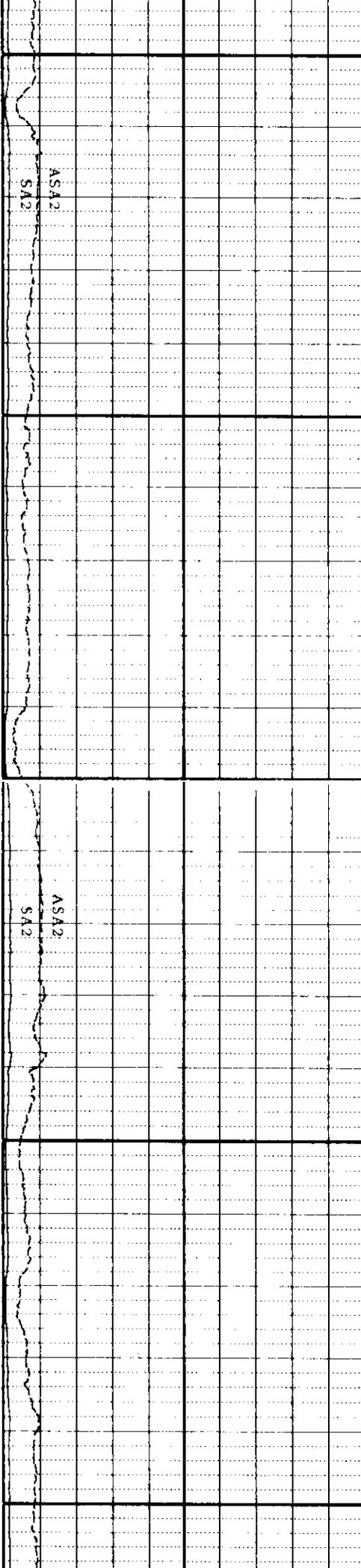


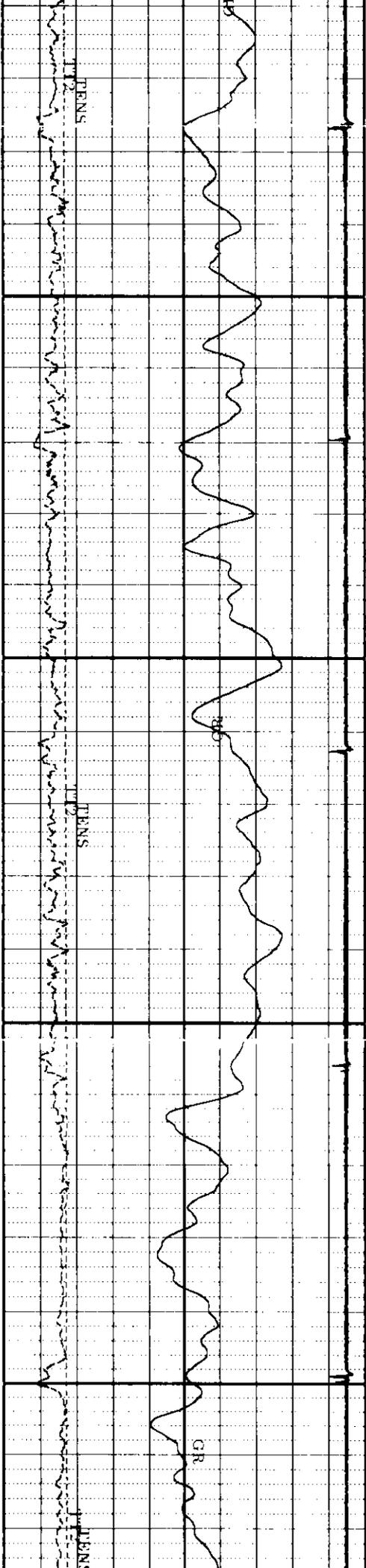


4800

4900

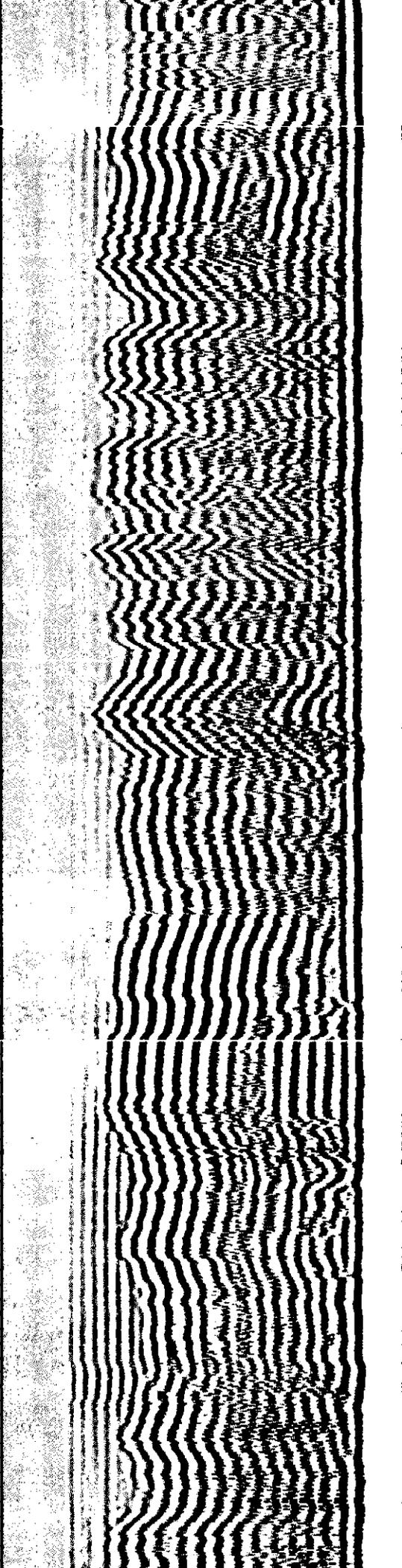
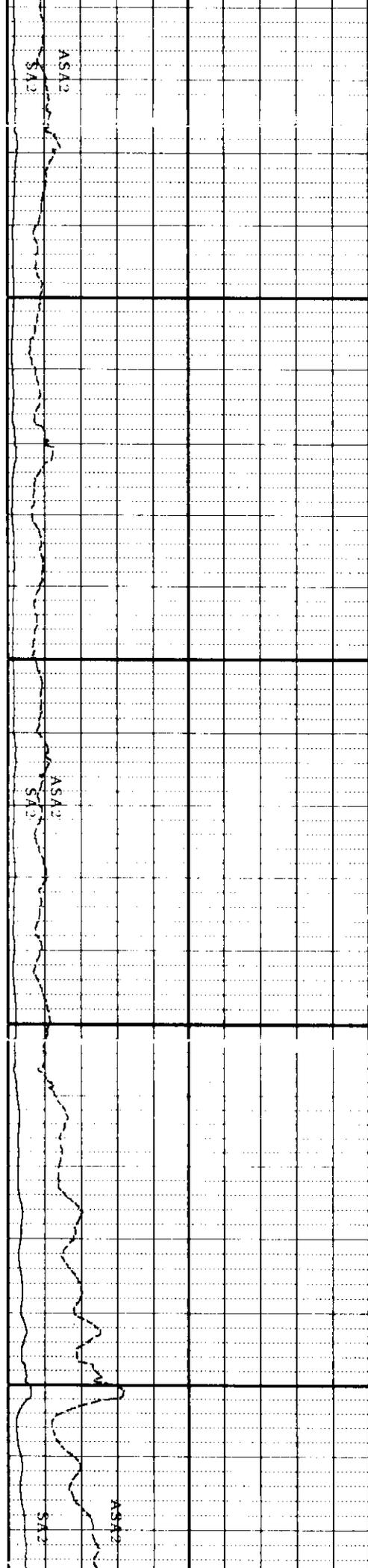
5000

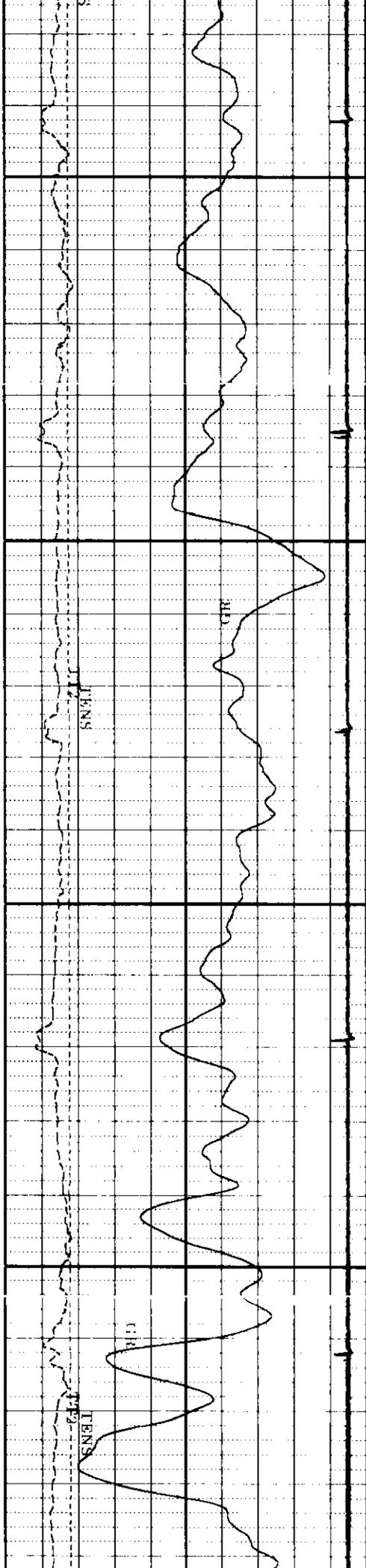




5100

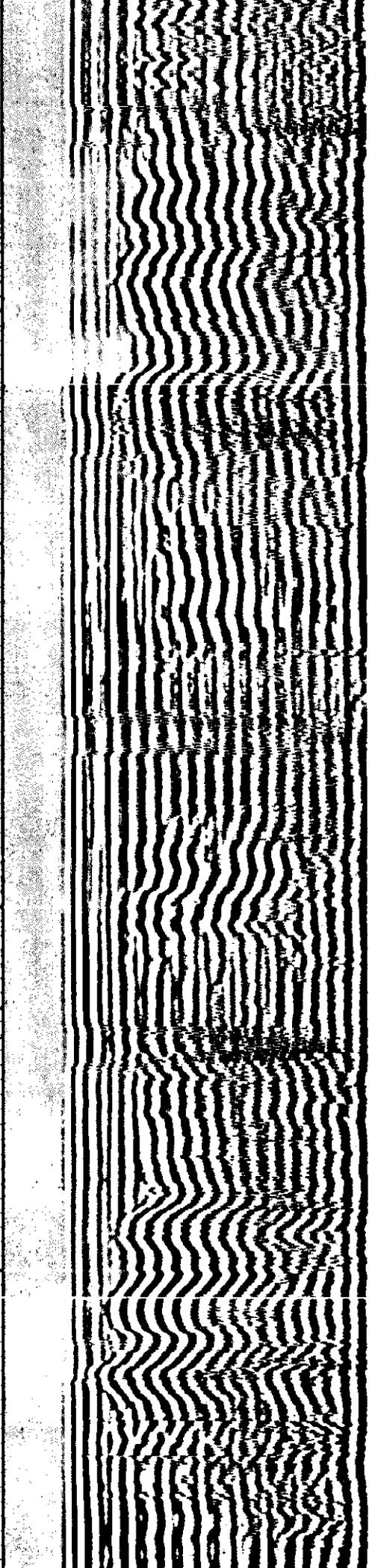
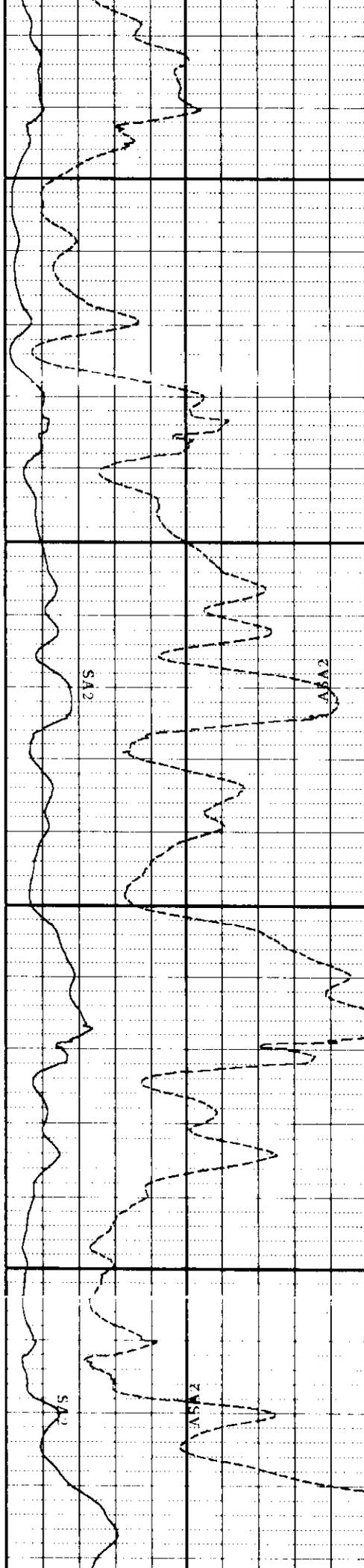
5200

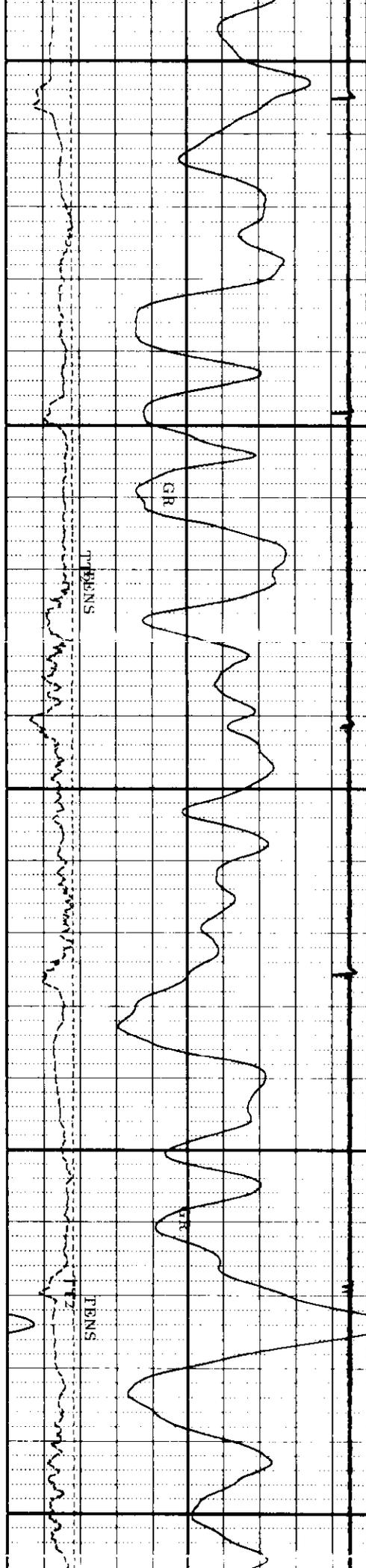




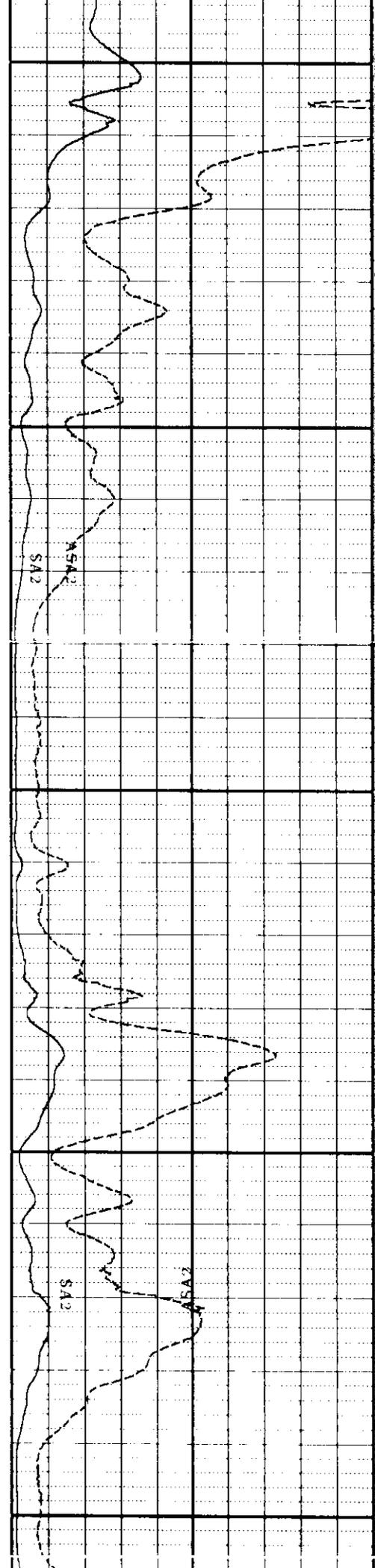
5300

5400

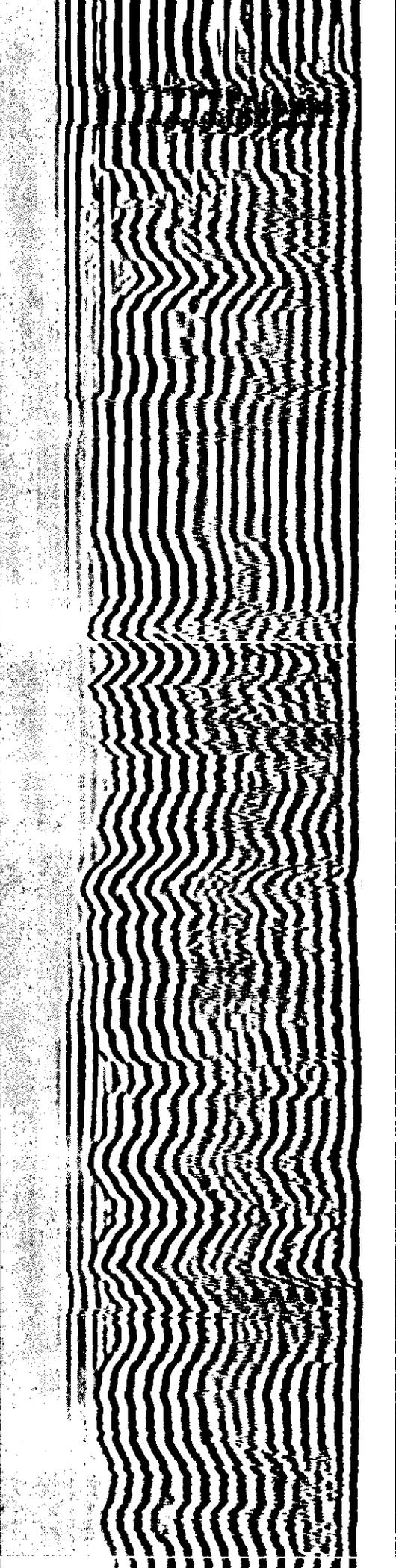


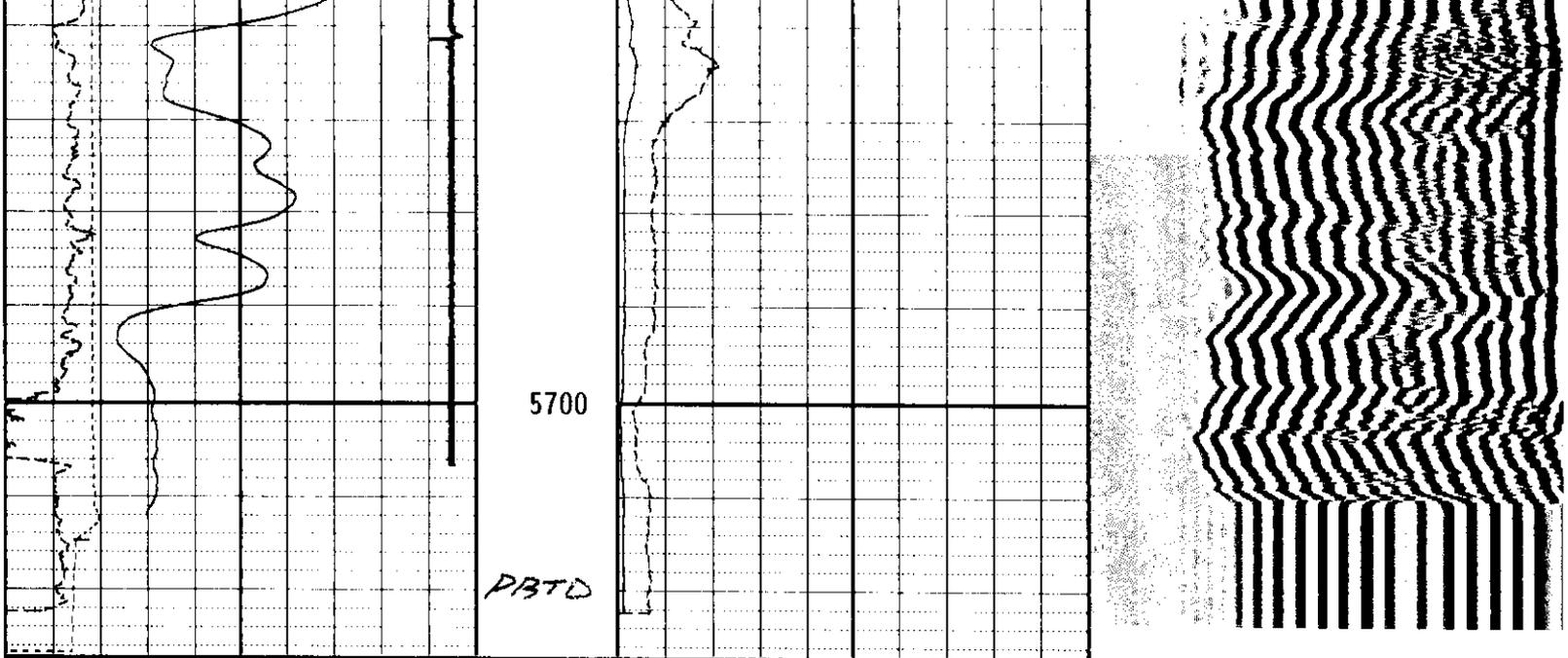


5500



5600





-250	CCL (LINE)	250			
0	GR (LINE)	150			
270	TT2 (DASH)	170	0	ASA2 (DASH)	20
0	TENS (DOT)	4000	0	SA2 (LINE)	100
			200	VDL (LINE)	1200

Film Scale 5 in = 100 feet (5 inch)

Sensor Measure Point to Tool Zero		
SLTJ\FREC	3.5	ft.
SLTJ\MPEC	4.5	ft.
SGTG GR	15.5	ft.
CCL-AJ	20.2	ft.
TENS	0.0	ft.
SPEED	0.0	ft.

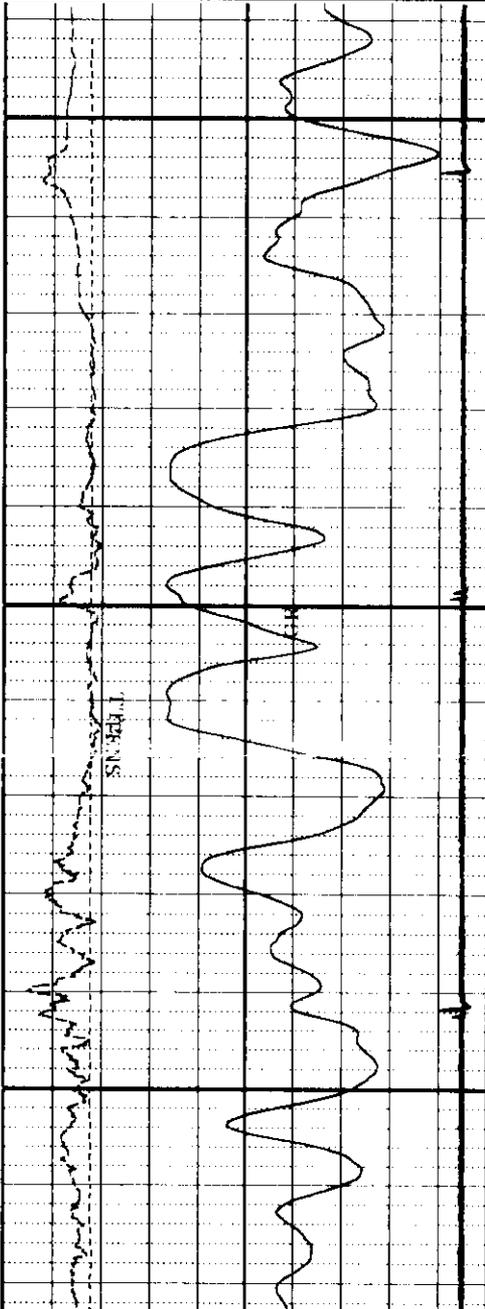
Software Version UX126
 Logging Pass Start Depth 5732.1 ft.
 Logging Pass Stop Depth 5455.2 ft.
 Pass No. 1
 Job Name 1000000

PLAYBACK OFFSET REPORT

File Offset = -13.5 ft.

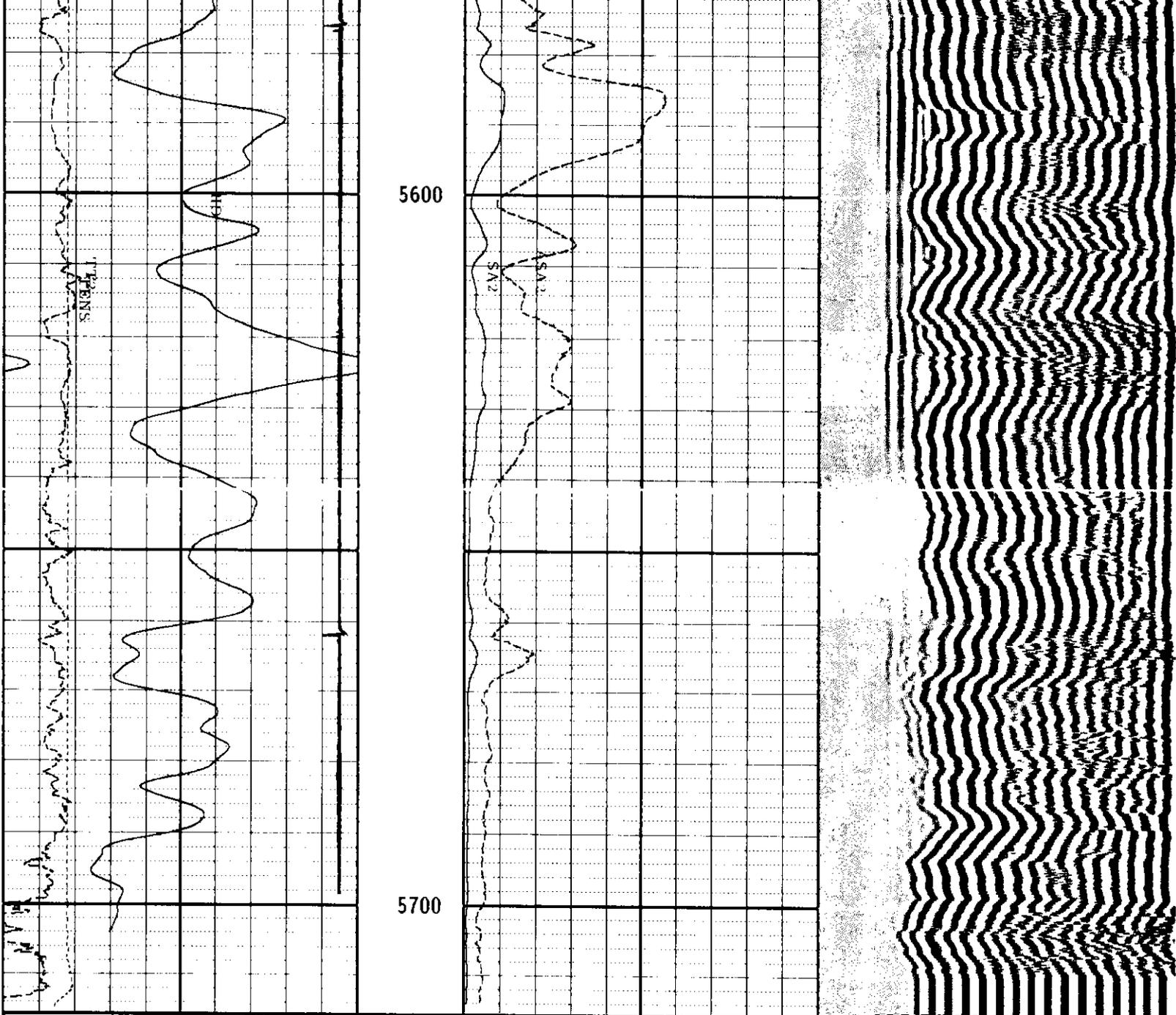
SCALE CHANGE REPORT
NO SCALE CHANGES THIS FILE

-250	CCI (LINE)	250	<i>REPEAT SECTION</i>					
0	GR (LINE)	150						
270	TT2 (DASH)	170						
0	TENS (DOT)	4000						
0	ASA2 (DASH)	20	0	SA2 (LINE)	100	200	VDL (LINE)	1200



5500





-250	CCL (LINE)	250	<i>REPEAT SECTION</i>					
0	GR (LINE)	150						
270	TT2 (DASH)	170						
0	TENS (DOT)	4000						
0	ASA2 (DASH)	20	0	SA2 (LINE)	100	200	VDL (LINE)	1200

Film Scale 5 in = 100 feet (5 inch)

Sensor Measure Point to Tool Zero		
SLTJ FREQ	3.5	ft
SLTJ NREC	4.5	ft
SGTG GR	15.5	ft.
CCL-AJ	20.2	ft.
TENS	0.0	ft.
SPEED	0.0	ft

ATTACHMENT NO. 8

OPEN HOLE LOG FOR THE UIC WELL

PETROBRAS YDU OPERATING

WELL NO. 40332123

UJIAN

UJIAN

COMPENSATED NEUTRON
LITHO-DENSITY
GAMMA RAY

SECTION OF
CORRECTION OF
GAMMA RAY

FORMING DATE: 17/01/2009
LOG MESSAGE FORM: NET LOGGING
LOG MESSAGE NUMBER: 40332123

DATE: 17/01/2009
TIME: 17:00

WELL NO: 40332123
WELL NAME: UJIAN

LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME

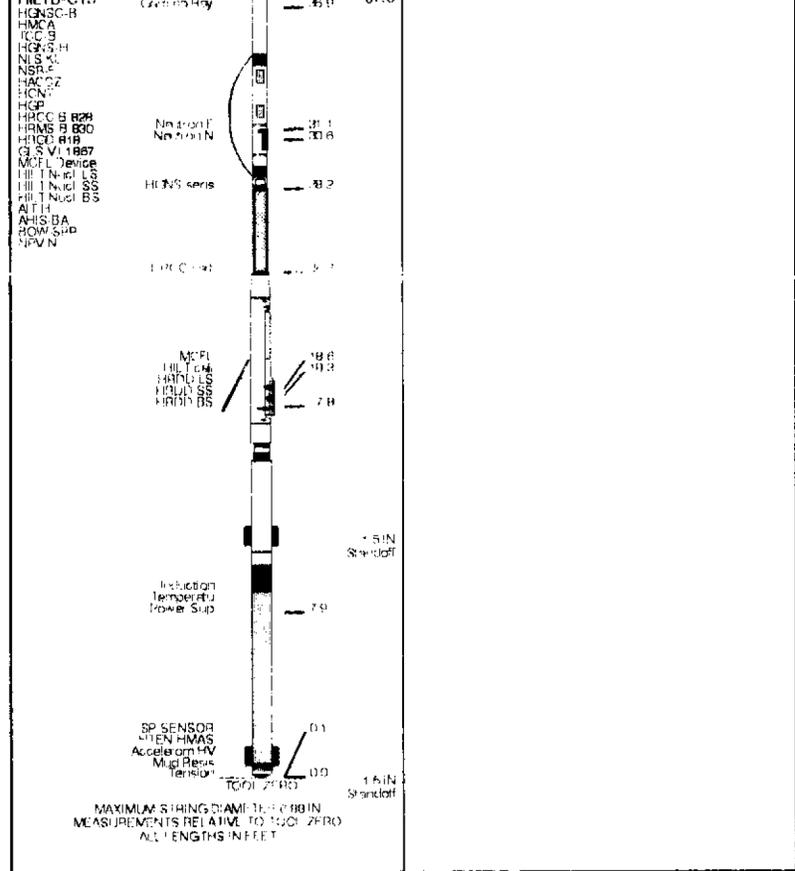
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME
LOG MESSAGE	DATE	TIME	WELL NO	WELL NAME

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCE FROM ELECTRICAL OR OTHER MEASUREMENTS AND ARE NOT GUARANTEED AND DO NOT CONSTITUTE THE ASSURANCE OR CORRECTION OF ANY INTERPRETATIONS AND WE SHALL NOT BE RESPONSIBLE FOR DAMAGES OR EXPENSES INCURRED OR SUFFERED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET FORTH IN OUR PRINTED REGISTRATION

OTHER SERVICE #1	OTHER SERVICE #2
031	031
032	032
033	033
034	034
035	035
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THANK YOU FOR CHOOSING SPILLMANT	
THIS IS THE PLATFORM EXPLORATION TOON IN BLOWSPRING RUN ON JNT	
SANDSTONE MATRIX 288 G/G	
CHECK TO FIX KEY	
SERVICE ORDER #	SERVICE ORDER #
PROGRAM VERSION	PROGRAM VERSION
FLUID LEVEL	FLUID LEVEL
LOGGED INTERVAL	LOGGED INTERVAL
START	START
STOP	STOP

EQUIPMENT DESCRIPTION

SURFACE EQUIPMENT		RUN 2	
TCM AR			
CSB-LUY			
NCT R			
CNB AR			
DOWNHOLE EQUIPMENT			
PFH-A		40.8	
AH-64	HONS ITEM	39.0	
AH-64	HMC	37.6	
AH-64	ITEM		



Output DLIS Files

DEFAULT HILTC.008 FN:6 FIELD 15-OCT-1998 08:48

Integrated Hole/Cement Volume Summary

Hole Volume = 2182.00 F3
 Cement Volume = 1203.43 F3 (assuming 5.50 IN casing O.D.)
 Computed from 6160.0 FT to 411.6 FT using data channel(s) HCAL

OP System Version: 7C0-427
DBM

HILTS-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLREQ	RPCVX-680	PERT	RPCVX-680

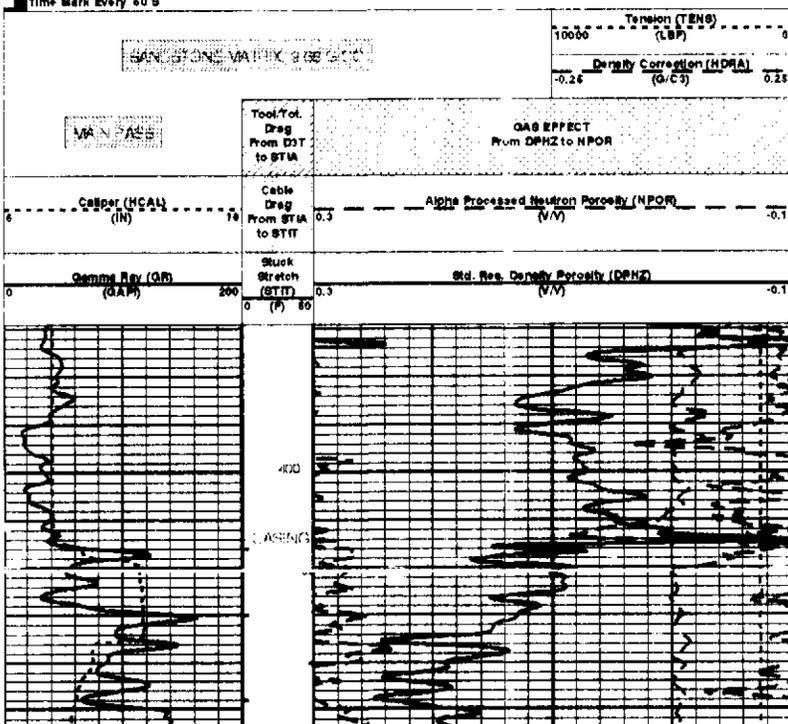
Changed Parameter Summary

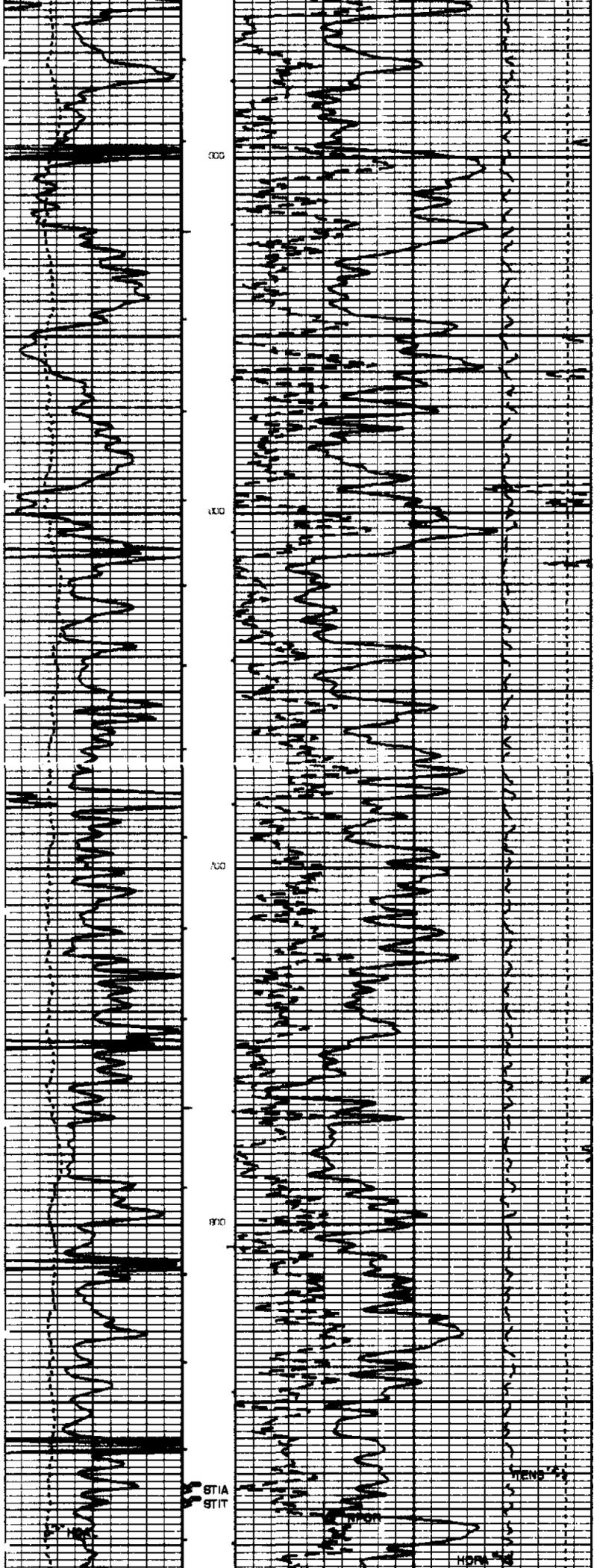
DLIS Name	New Value	Previous Value	Depth & Time
BB	7.676 IN	7.676 IN	4574.2 09:26:27
BSAL	1200.00 PPM	800.00 PPM	4212.8 09:32:29

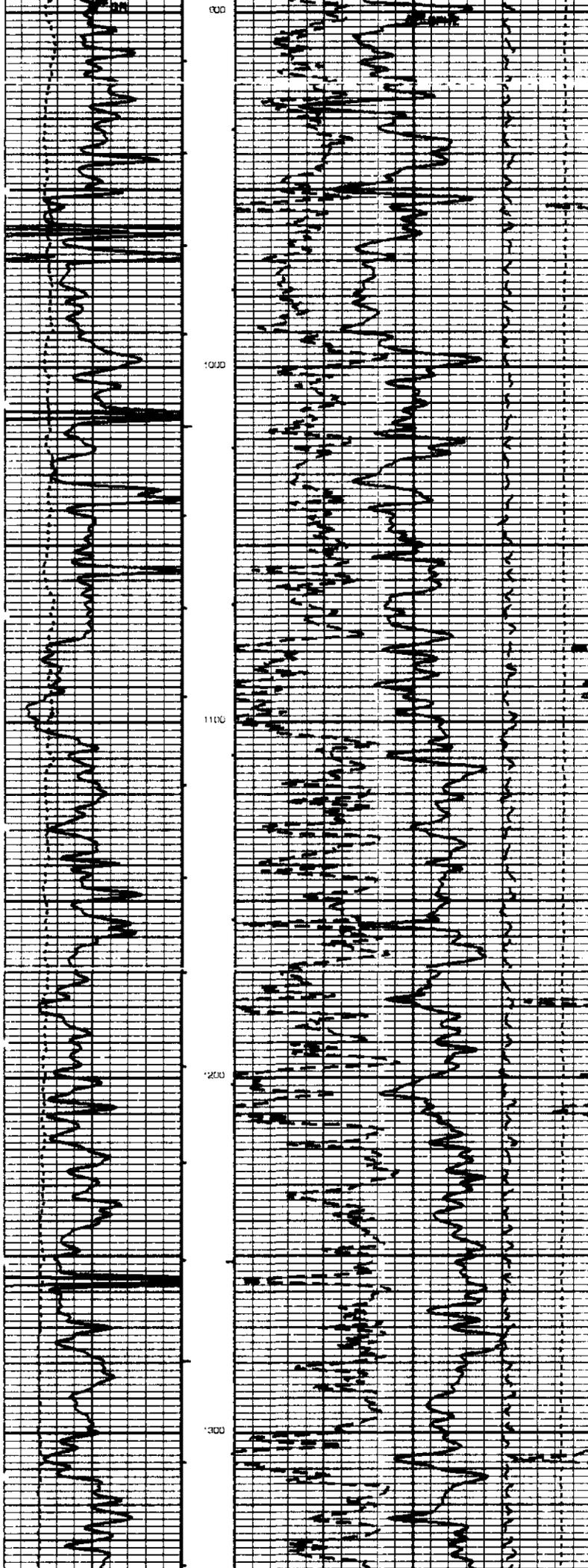
PIP SUMMARY

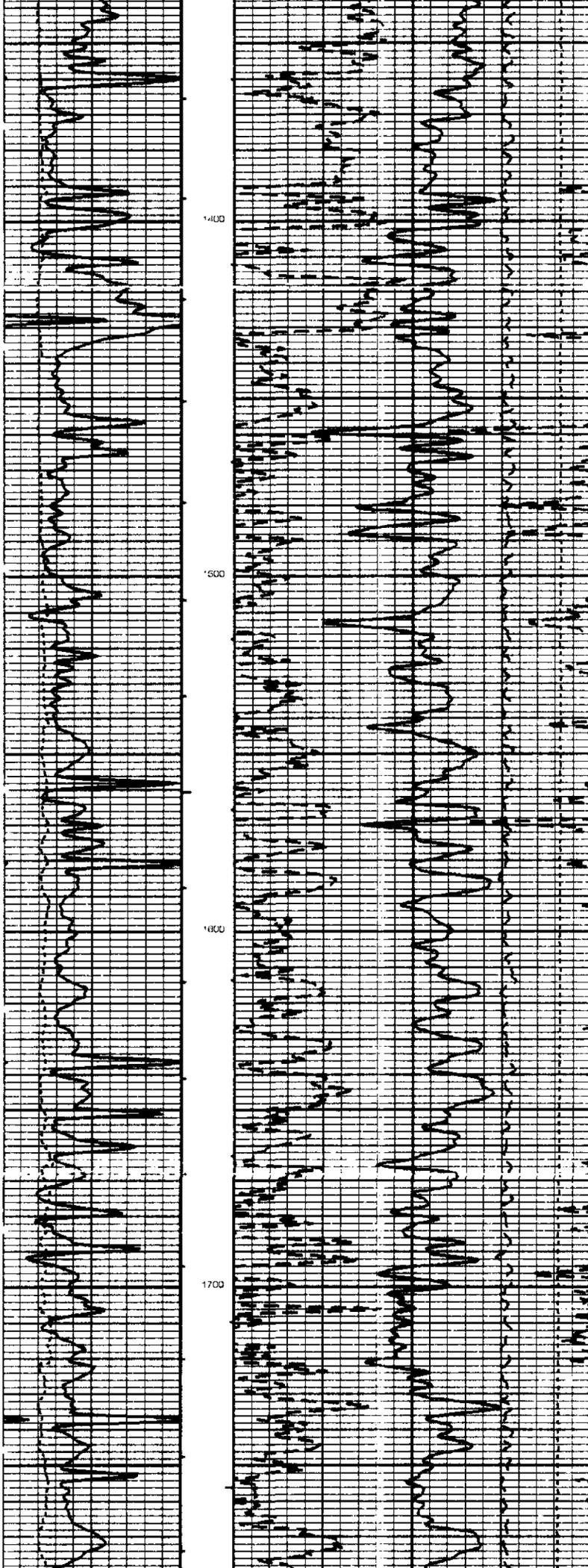
- ▶ Integrated Hole Volume Minor Pip Every 10 F3
- ▶ Integrated Hole Volume Major Pip Every 100 F3
- ▶ Integrated Cement Volume Minor Pip Every 10 F3
- ▶ Integrated Cement Volume Major Pip Every 100 F3

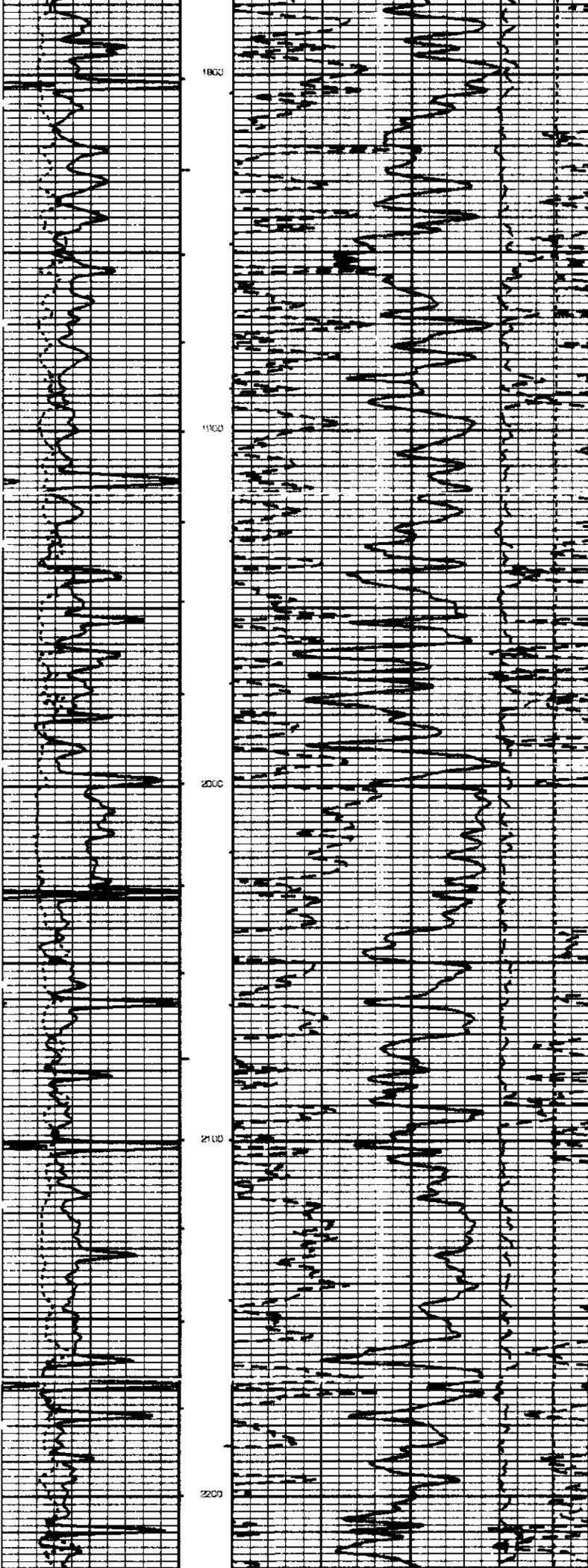
Time Mark Every 60 S











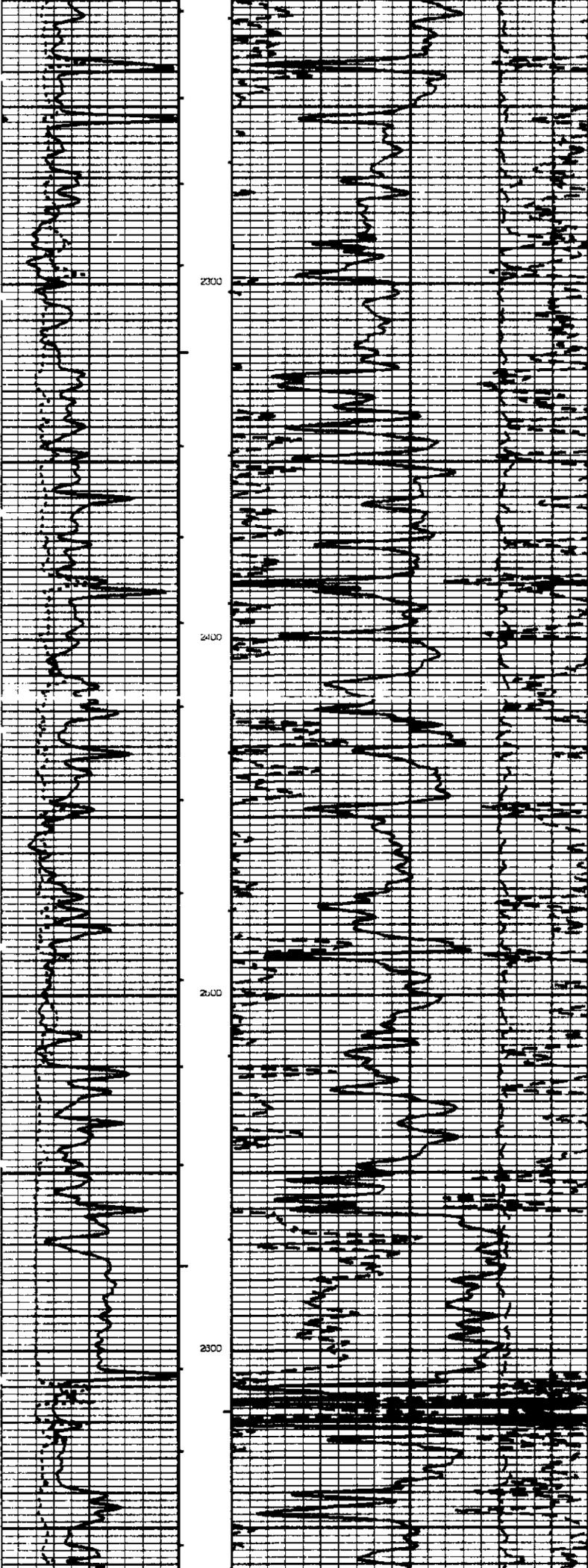
1800

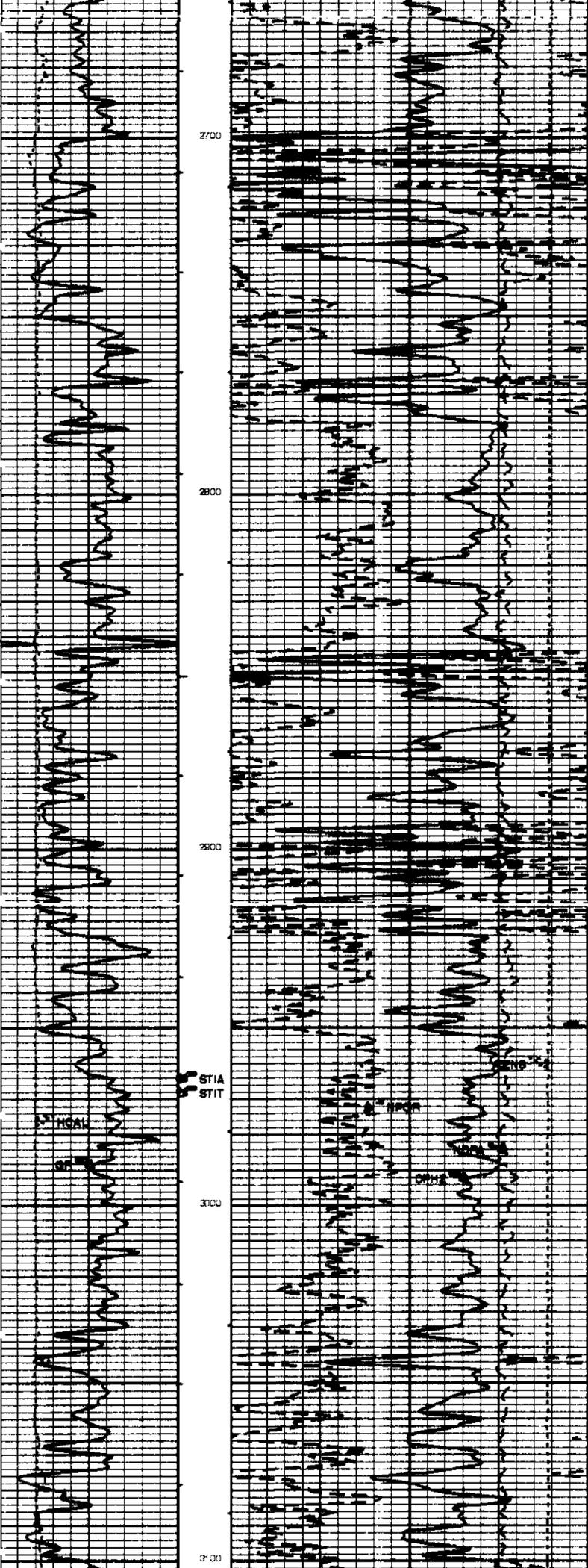
1900

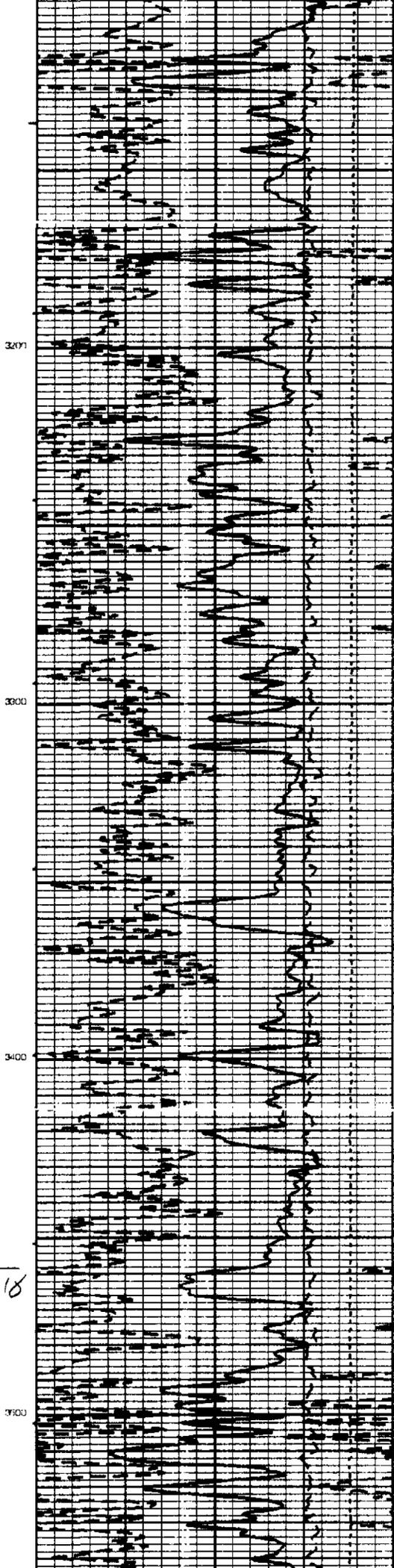
2000

2100

2200







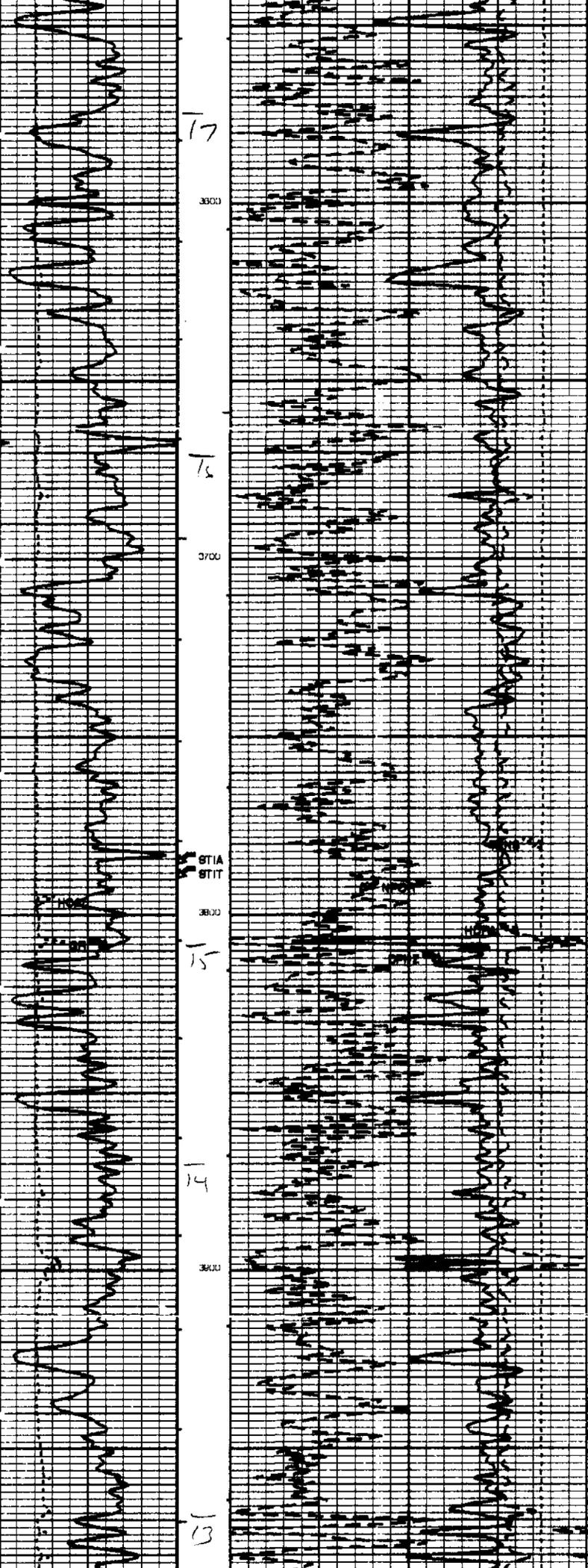
3271

3300

3400

8

3500



T1

3300

T2

3700

STIA
STIT

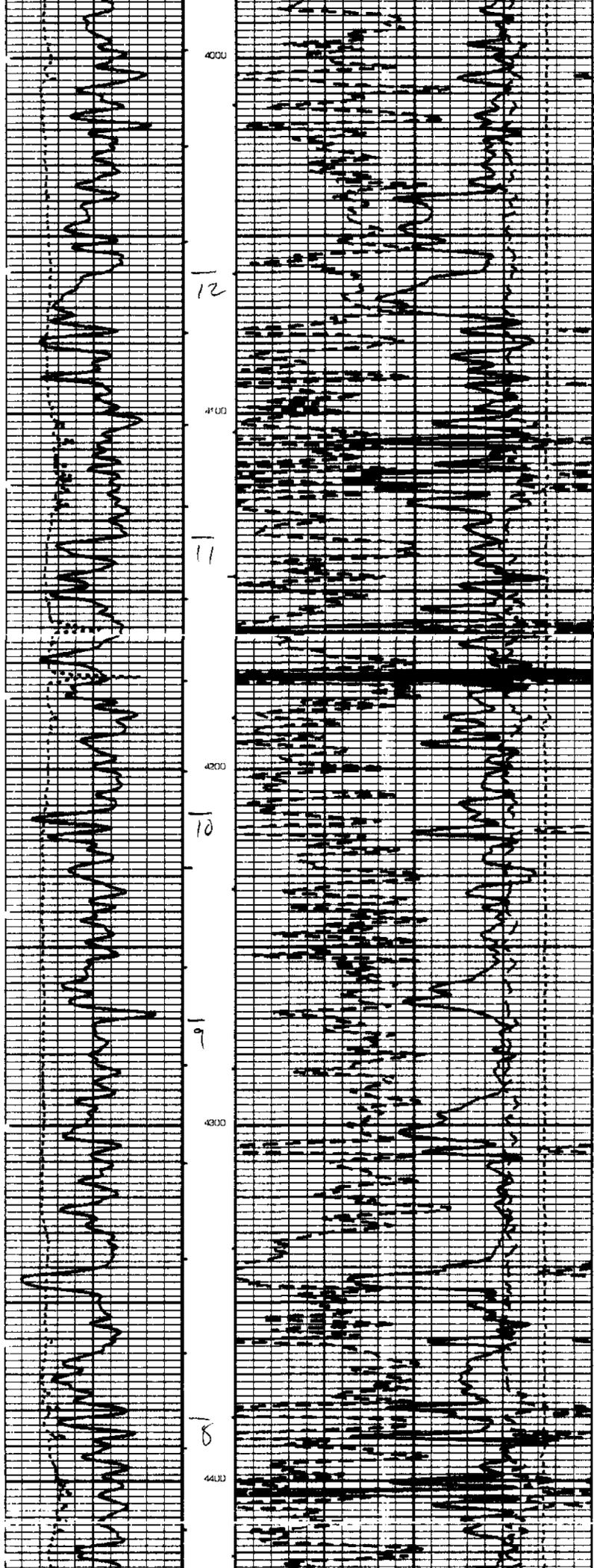
3800

T3

T4

3600

T5



4000

12

4100

11

4200

10

9

4300

8

4400



7
4600

6

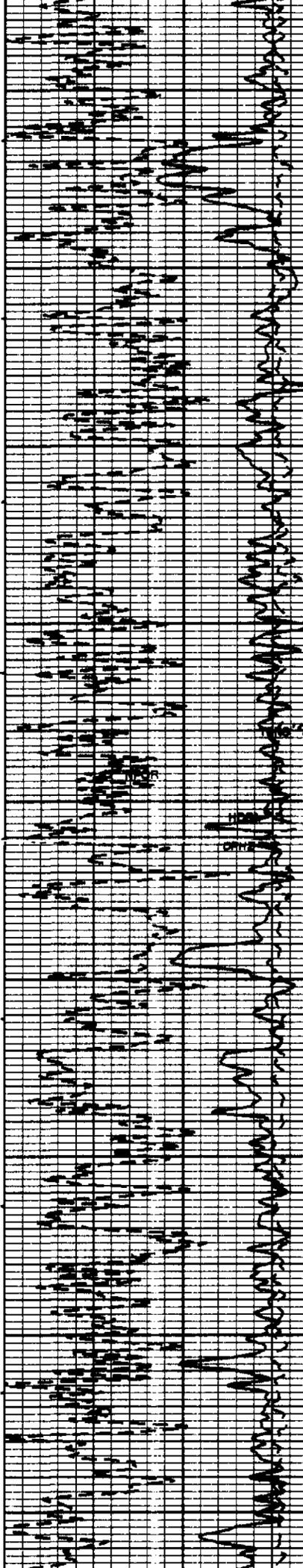
4800

BTIA
BTIT

5
4700

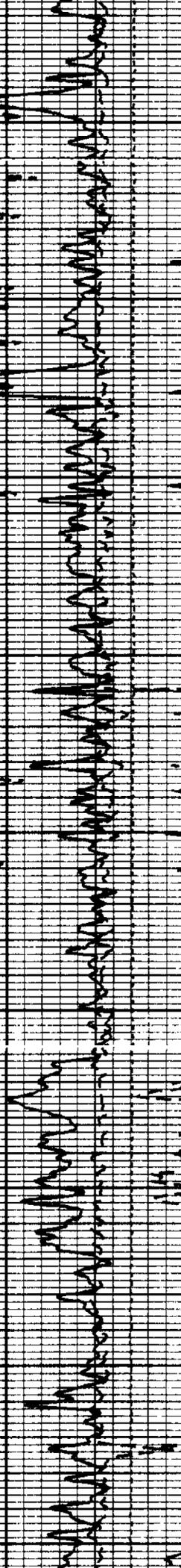
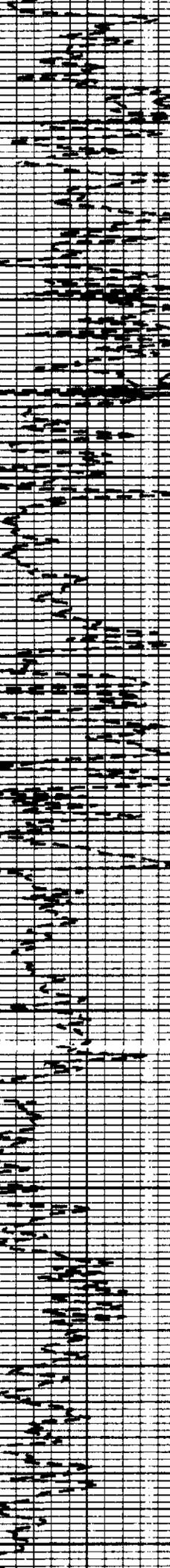
4
4600

3

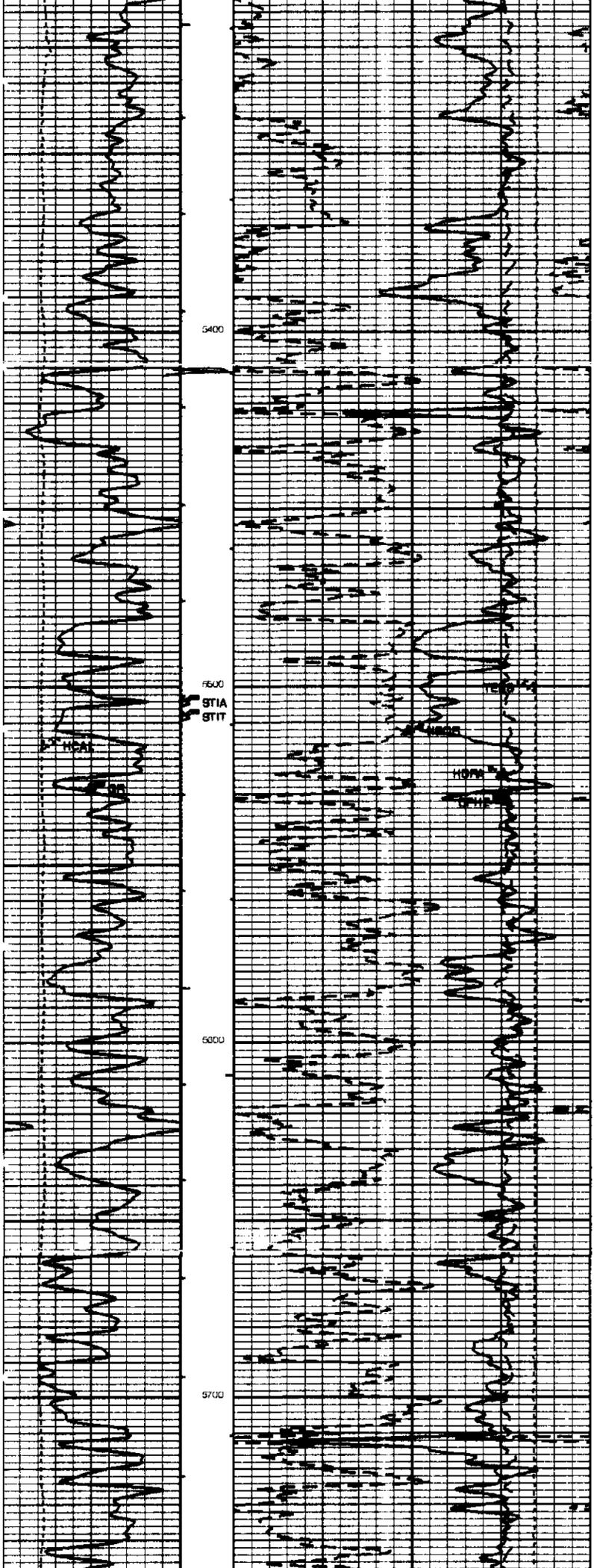


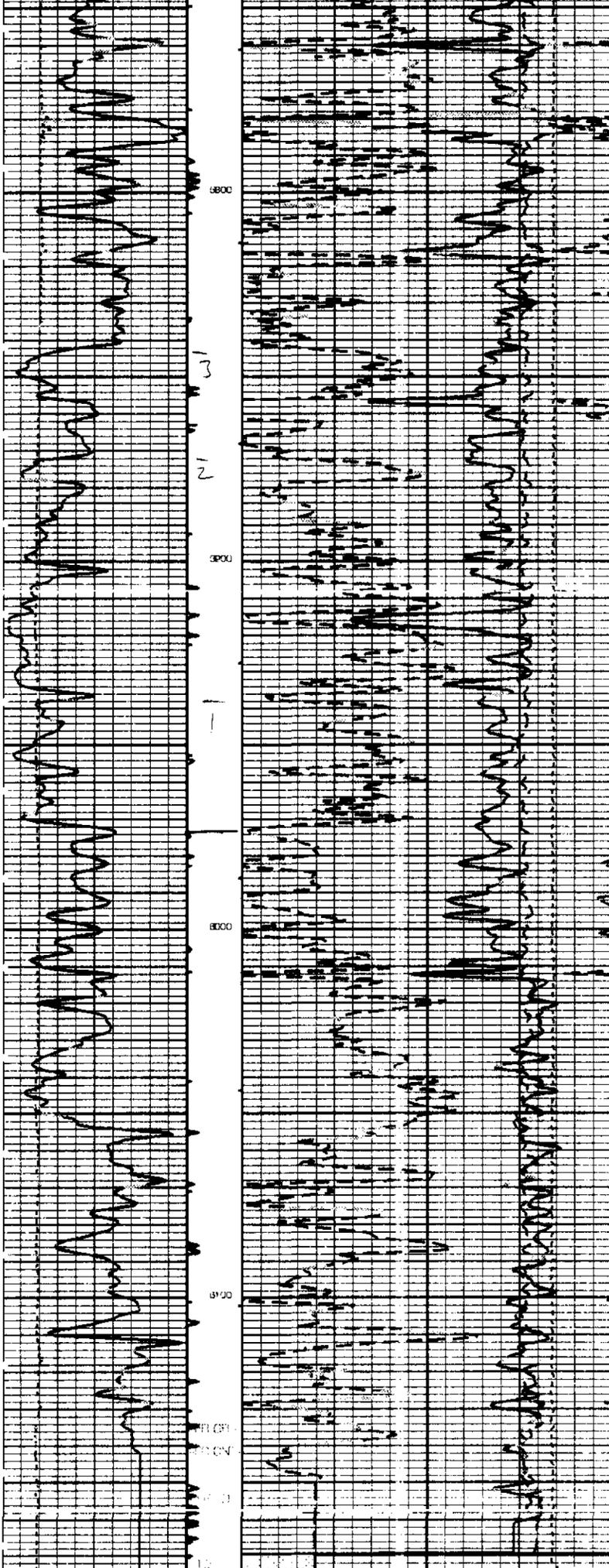


12

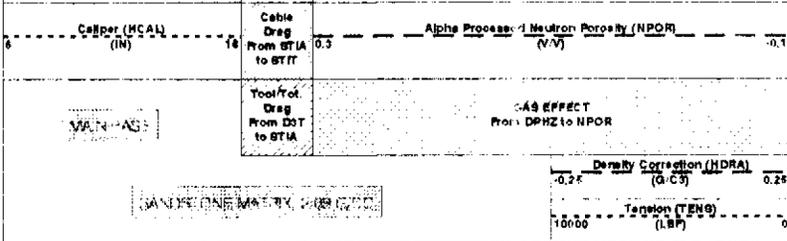


13





Gamma Ray (GR) 0 200 (GAP)
 Bulk Resistivity (RTT) 0 0.1 (V.V)
 Std. Dev. of Porosity (DPHZ) 0 0.1 (V.V)



PIP SUMMARY
 Integrated Hole Volume Minor Pip Every 10 F3
 Integrated Hole Volume Major Pip Every 100 F3
 Integrated Cement Volume Minor Pip Every 10 F3
 Integrated Cement Volume Major Pip Every 100 F3
 Time Mark Every 60 S

DLIS Name	Description	Value
BHFL	Borehole Fluid Type	WATER
BHS	Bore Hole Status	OPEN
BS	BH Size	7.875 IN
BSAL	Borehole Salinity	800.00 PPM
BSCC	Borehole Salinity Correction Option	NO
CCCO	Casing & Cement Thickness Correction Option	NO
CW/EI	Casing Weight	24.00 LB/F
DPD	Drilling Fluid Density	8.30 LB/G
DHC	Density Hole Correction	BS
DDRL	Depth Offset Repeat Analysis	0.0 FT
FD	Fluid Density	1 G/C3
FSAL	Formation Salinity	-50000 PPM
FSCC	Formation Salinity Correction Option	NO
GCSE	Generalized Caliper Selection	HCAL
QDEV	Average Angular Deviation of Borehole from Normal	0 DEG
QGRD	Geothermal Gradient	1.00000e-02 DP/F
HMPCO	HILT RTSC Measure points correction	NO
HSCM	HILT Speed Correction Mode	TBCD SpeedCorrect
HSCC	Hole Size Correction Option	YES
HSTI	HSTI Use HILT Acceleration	YES
NATR	Rock Matrix Type	SANDSTONE
MCCO	Mud Cake Correction Option	NO
MCCR	Mud Correction	NATU
MDEN	Mud Density	2.68 G/C3
MST	Mud Sample Temperature	48.00 DEGF
MWCO	Mud Weight Correction Option	NO
NAV	HRDD Density/Pe Algorithm Version	1
NBT	HILT Nuclear Mud Type	NOBARITE
NPRM	HRDD Processing Mode	StdRes
NSAR	HRDD Depth Sampling Rate	1 IN
PTCO	Pressure/Temperature Correction Option	NO
RMPB	Responsivity of Mud Filtrate Sample	2.2400 OHMM
SDAT	Standoff Data Source	SOCH
SHT	Surface Hole Temperature	50 DEGF
SOCN	Standoff Distance	0.125 IN
SOCO	Standoff Correction Option	YES
STKT	HSTI Stack Threshold	2.5 FT

Format: PDND Vertical Scale: 5' per 100' Graphics File Created: 15-OCT-1998 08:48

OP System Version: 7C0-427
 DBM
 HILTB-CTS RPCVX-680 NOLEV RPCVX-680
 ALLRES RPCVX-680 PERT RPCVX-680

Output DLIS Files
 DEFAULT HILTC.006 FN:6 FIELD 15-OCT-1998 08:48

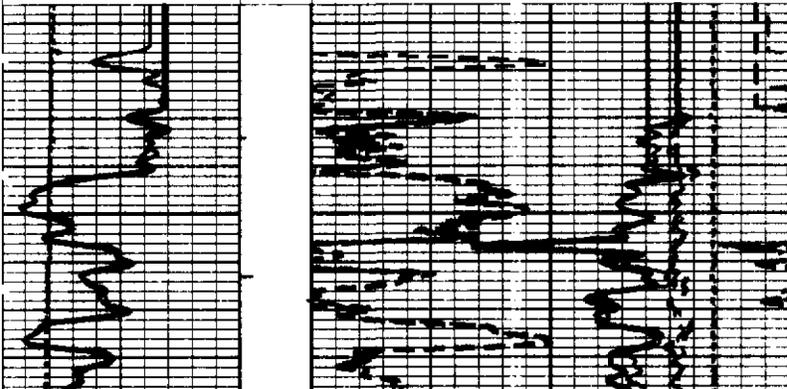
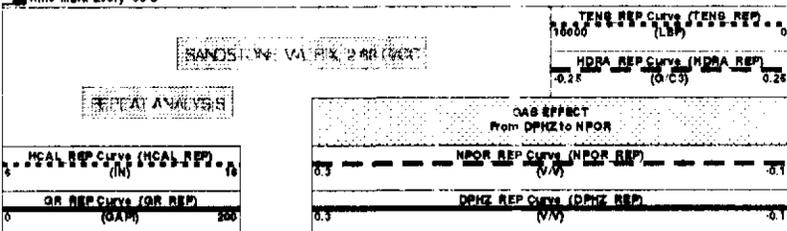
Input DLIS Files
 DEFAULT HILTC.007 FN:5 FIELD 15-OCT-1998 08:37 5174.0 FT 5808.7 FT

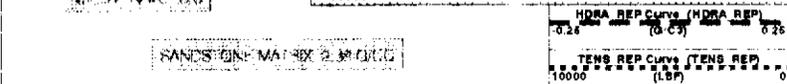
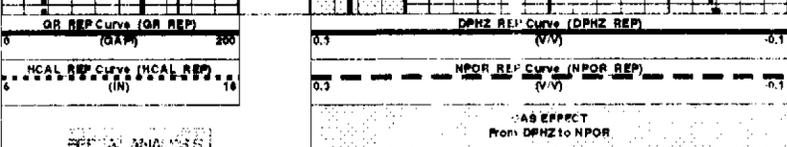
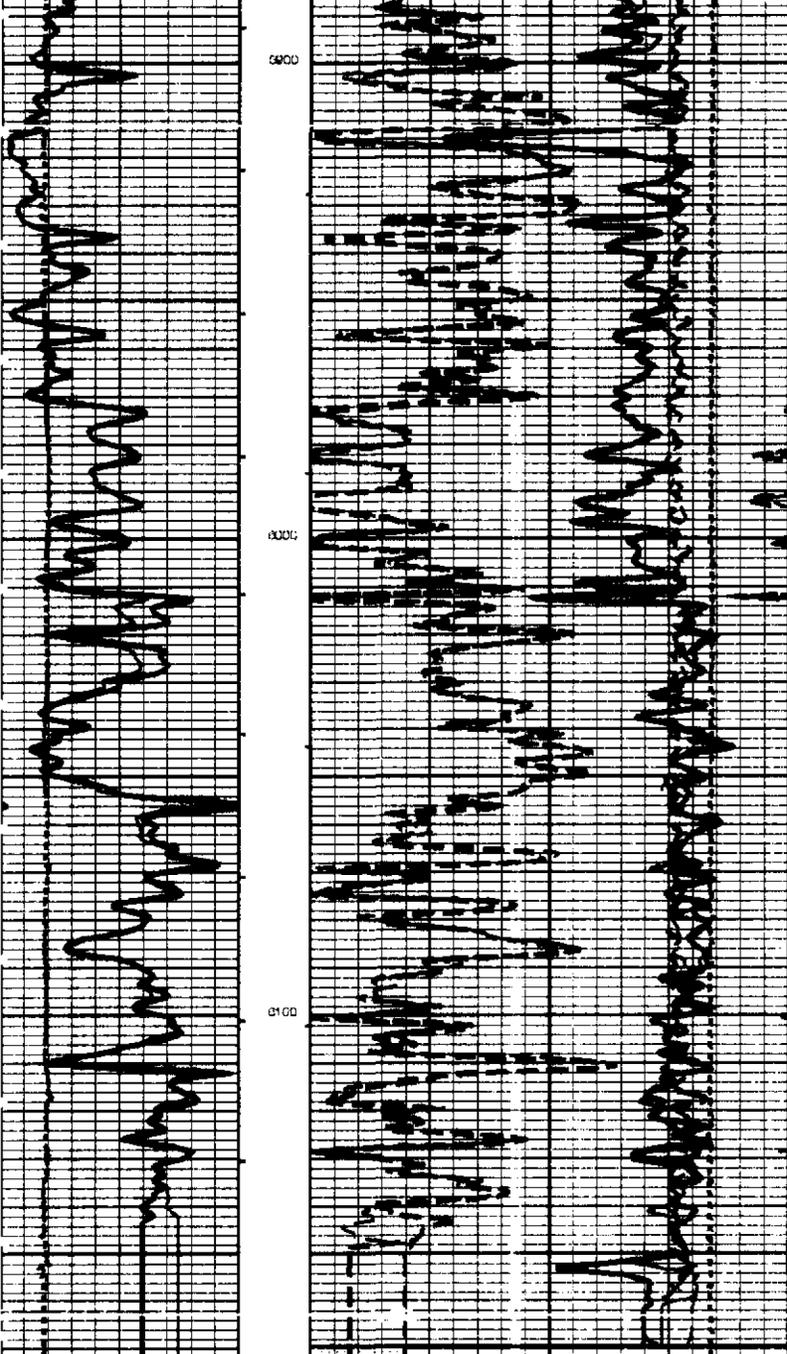
Output DLIS Files
 DEFAULT HILTC.008 FN:6 FIELD 15-OCT-1998 08:48

Integrated Hole/Cement Volume Summary
 Hole Volume = 119.27 F3
 Cement Volume = 41.11 F3 (assuming 5.50 IN casing O.D.)
 Computed from 5160.0 FT to 5808.0 FT using data dhama(s) HCAL

OP System Version: 7C0-427
 DBM
 HILTB-CTS RPCVX-680 NOLEV RPCVX-680
 ALLRES RPCVX-680 PERT RPCVX-680

PIP SUMMARY
 Integrated Hole Volume Minor Pip Every 10 F3
 Integrated Hole Volume Major Pip Every 100 F3
 Integrated Cement Volume Minor Pip Every 10 F3
 Integrated Cement Volume Major Pip Every 100 F3
 Time Mark Every 60 S





GR REP Curve (GR REP) 0 200
 NCAL REP Curve (NCAL REP) 0 10
 DPHZ REP Curve (DPHZ REP) 0.1 0.3
 NPOR REP Curve (NPOR REP) 0.1 0.3
 HDRA REP Curve (HDRA REP) 0 0.25
 TENS REP Curve (TENS REP) 0 10000
 AS EFFECT From DPHZ to NPOR
 SANDSTONE MATRIX CORRECTED
 PIP SUMMARY
 Integrated Note Volume Minor Pip Every 10 F3
 Integrated Note Volume Major Pip Every 100 F3
 Integrated Cement Volume Minor Pip Every 10 F3
 Integrated Cement Volume Major Pip Every 100 F3
 Time Mark Every 60 S

DLIS Name	Description	Value
BHPL	Borehole Fluid Type	WATER
BHS	Bore Hole Status	OPEN
BS	SR Size	7.875 IN
BSAL	Borehole Salinity	800.00 PPM
BSCO	Borehole Salinity Correction Option	NO
CSCO	Casing & Cement Thickness Correction Option	NO
CW/EI	Casing Weight	24.00 LB/F
DPD	Drilling Fluid Density	8.30 LB/G
DMC	Density Note Correction	BS
DO RL	Depth Offset Repeat Analysis	0.0 FT
FD	Fluid Density	1 G/C3
FSAL	Formation Salinity	50000 PPM
FSCO	Formation Salinity Correction Option	NO
GCSE	Generalized Calliper Selection	HCAL
QDEF	Average Angular Deviation of Borehole from Normal	0 DEG
QGRD	Geothermal Gradient	1.000000e-02 DP/F
NMPCO	NILT RTSC Measur's points correction	NO
HSCM	NILT Speed Correction Mode	TSCD SpeedCorrect
HSCO	Note Bias Correction Option	YES
HSTI	STI Uses NILT Acceleration	YES
NATR	Rock Matrix Type	SANDSTONE
MCCO	Mud Cake Correction Option	NO
MCCR	Mud Correction	NATU
MDEN	Mud Density	2.48 G/C3
MST	Mud Sample Temperature	48.00 DEG F
MWCO	Mud Weight Correction Option	NO
NAV	NRDD Density/PS Algorithm Version	1

RMT	HILT	NO BARITE
NRH	NRDD	3d Res
NSAR	NRDD	1 IN
PTCO	Pressure/Temperature Correction Option	NO
RMPS	Reliability of Mud Filtrate Sample	2.2400
SDAT	Standoff Data Source	SO CN
SHT	Surface Hole Temperature	50
SO CN	Standoff Distance	0.125
SO CO	Standoff Correction Option	Y BS

Format: FORD REP Vertical Scale: 5 per 100 Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427
DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLREG	RPCVX-680	PERT	RPCVX-680

Input DLIS Files

DEFAULT	HILTC.007	FN:6	FIELD	15-OCT-1996 08:37	6174.0 FT	5805.7 FT
---------	-----------	------	-------	-------------------	-----------	-----------

Output DLIS Files

DEFAULT	HILTC.008	FN:6	FIELD	15-OCT-1996 08:48		
---------	-----------	------	-------	-------------------	--	--

Output DLIS Files

DEFAULT	HILTC.008	FN:6	FIELD	15-OCT-1996 08:48		
---------	-----------	------	-------	-------------------	--	--

Integrated Hole/Cement Volume Summary

Hole Volume = 2182.00 F3
 Cement Volume = 1205.43 F3 (assuming 8.80 IN casing O.D.)
 Computed from 8160.0 FT to 6111.0 FT using data channel(s) HCAL

OP System Version: 7C0-427
DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLREG	RPCVX-680	PERT	RPCVX-680

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BS	7.875 IN	7.875 IN	4879.2 09:28:27

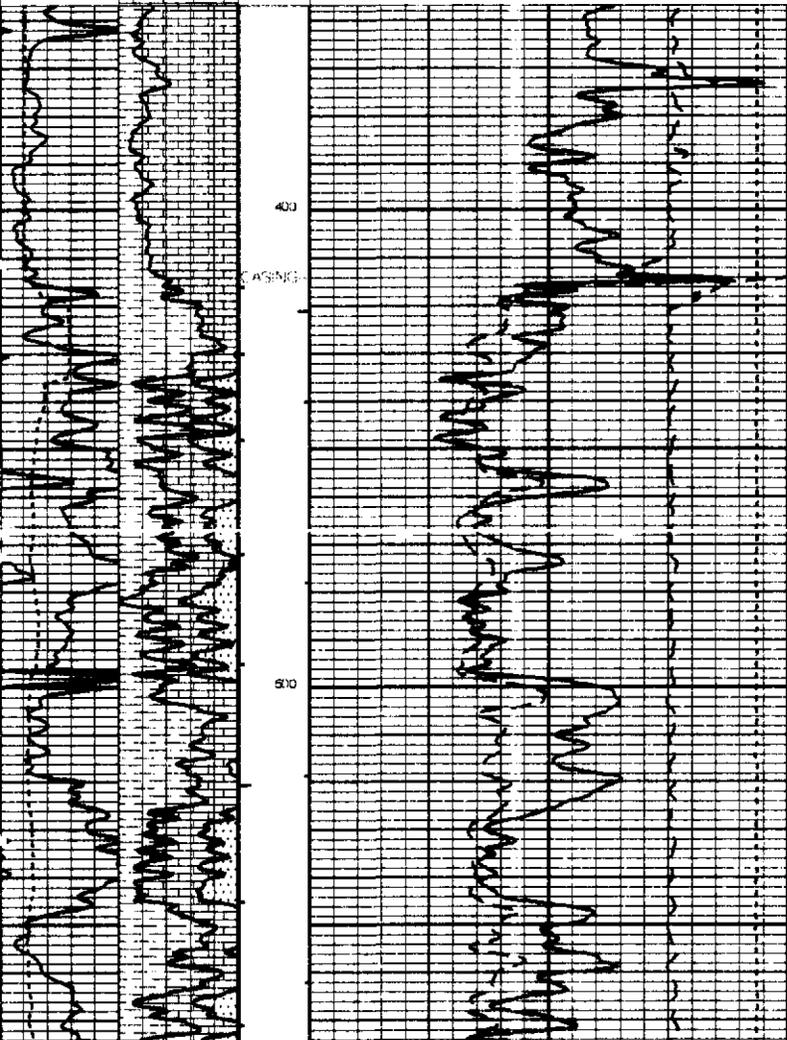
PIP SUMMARY

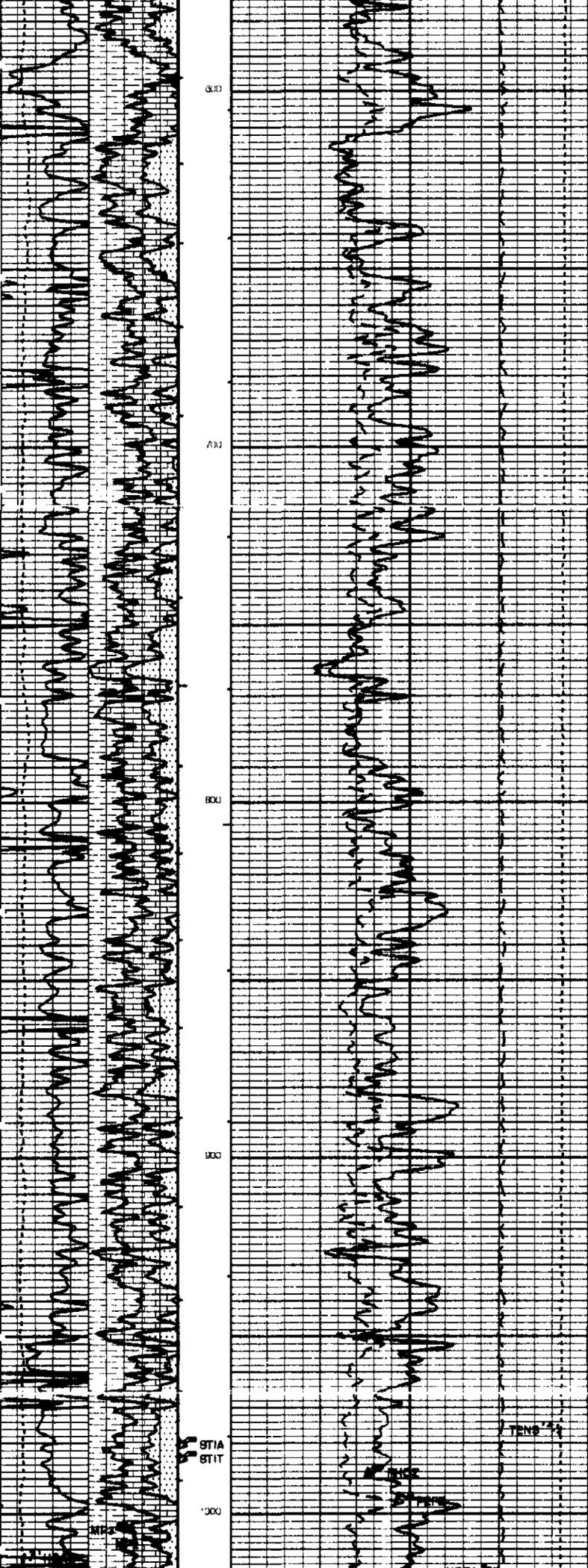
- ↑ Integrated Hole Volume Minor Pip Every 10 F3
- ↑ Integrated Hole Volume Major Pip Every 100 F3
- ↓ Integrated Cement Volume Minor Pip Every 10 F3
- ↓ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Tension (TENS)	(LBP)	0
Density Correction (HDRA)	(G.C)	0.5

Caliper (HCAL)	Caliper (IN)	0	16
Gamma Ray (GR)	GAM (GAP)	0	110





000

100

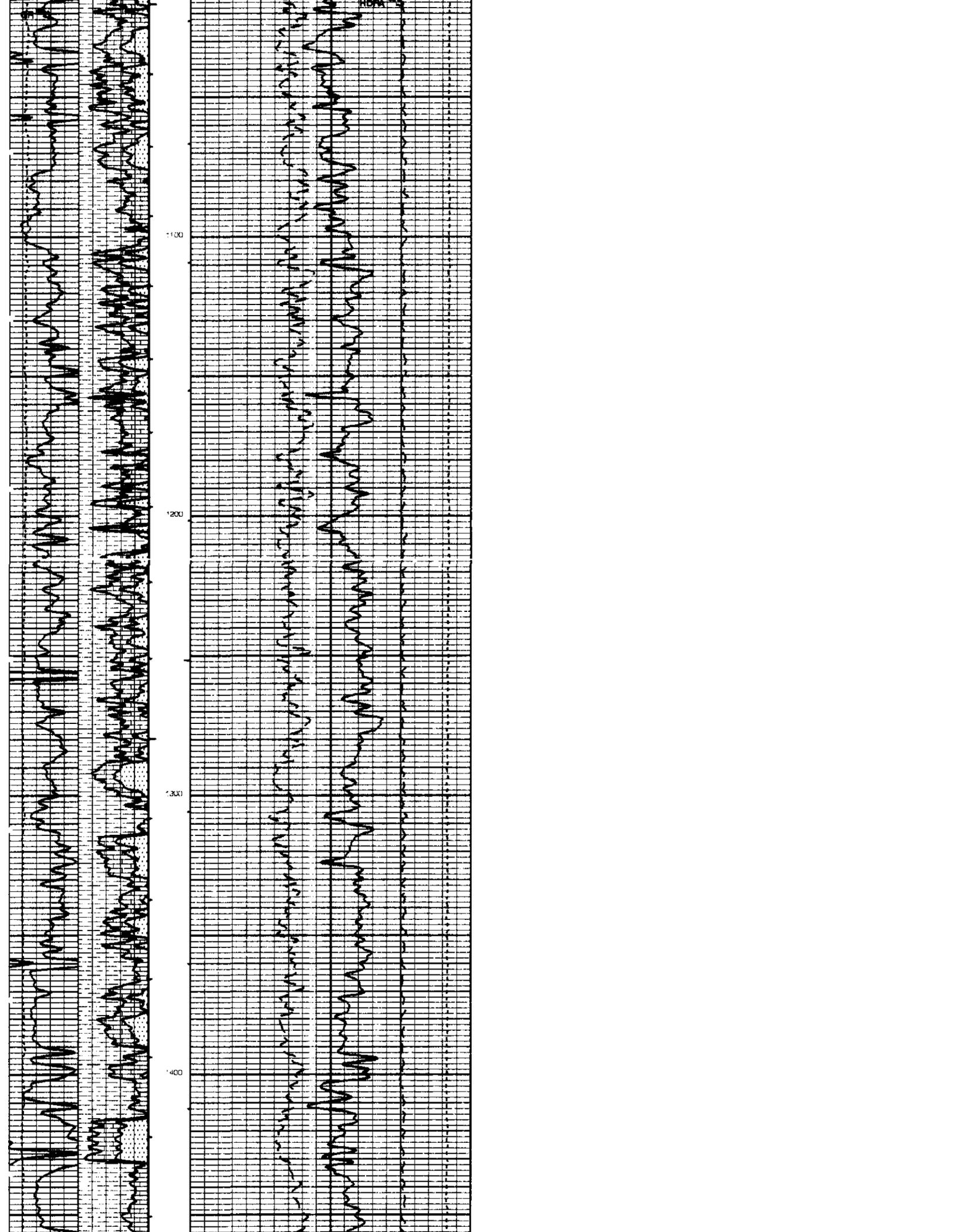
200

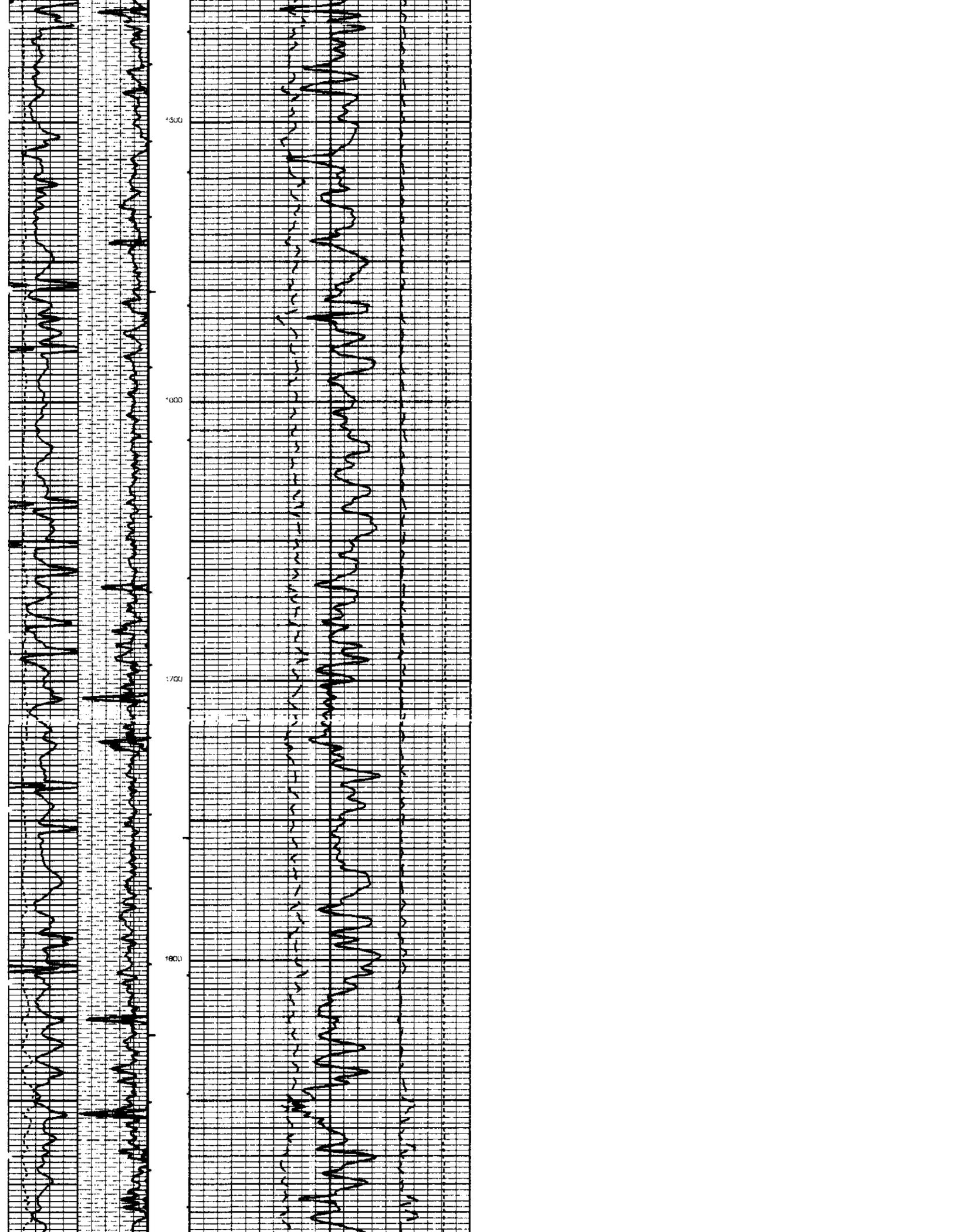
300

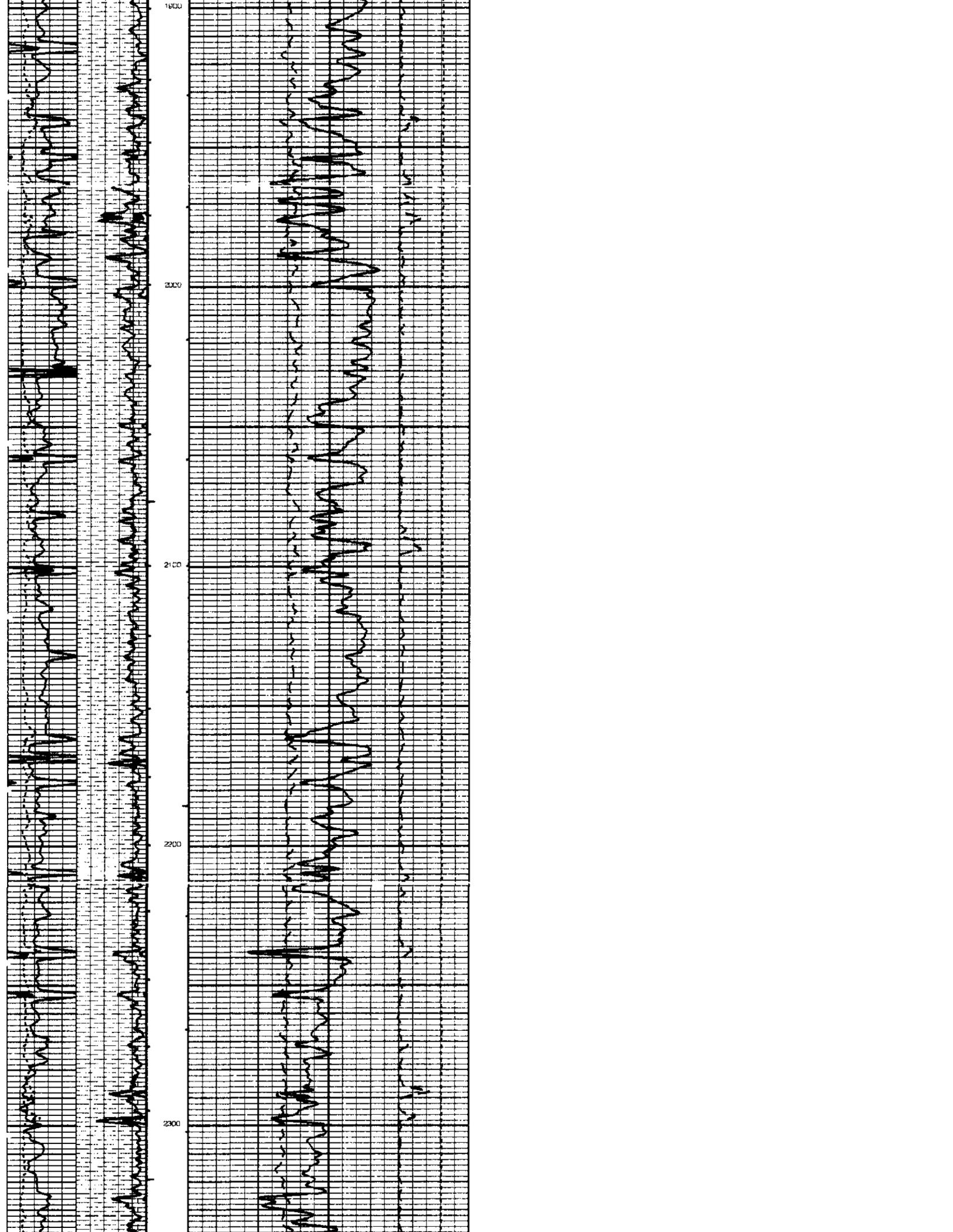
400

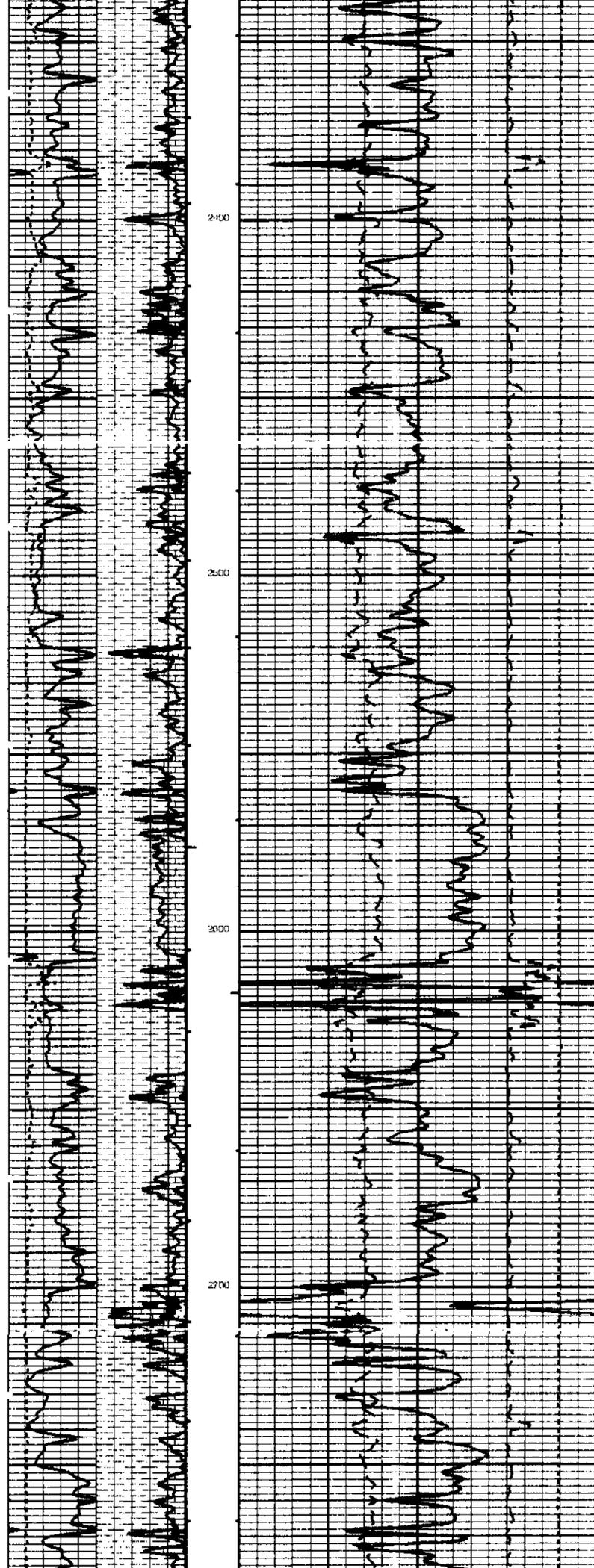
ST1A
ST1T

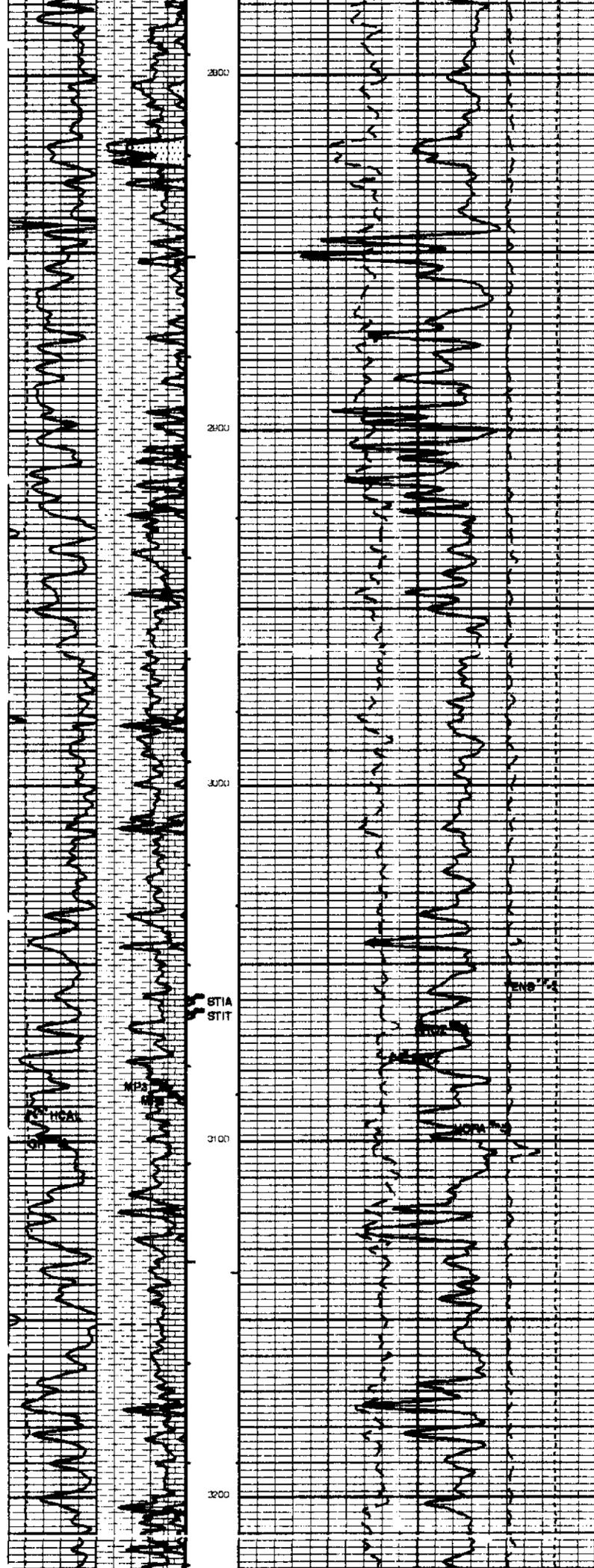
TRNG

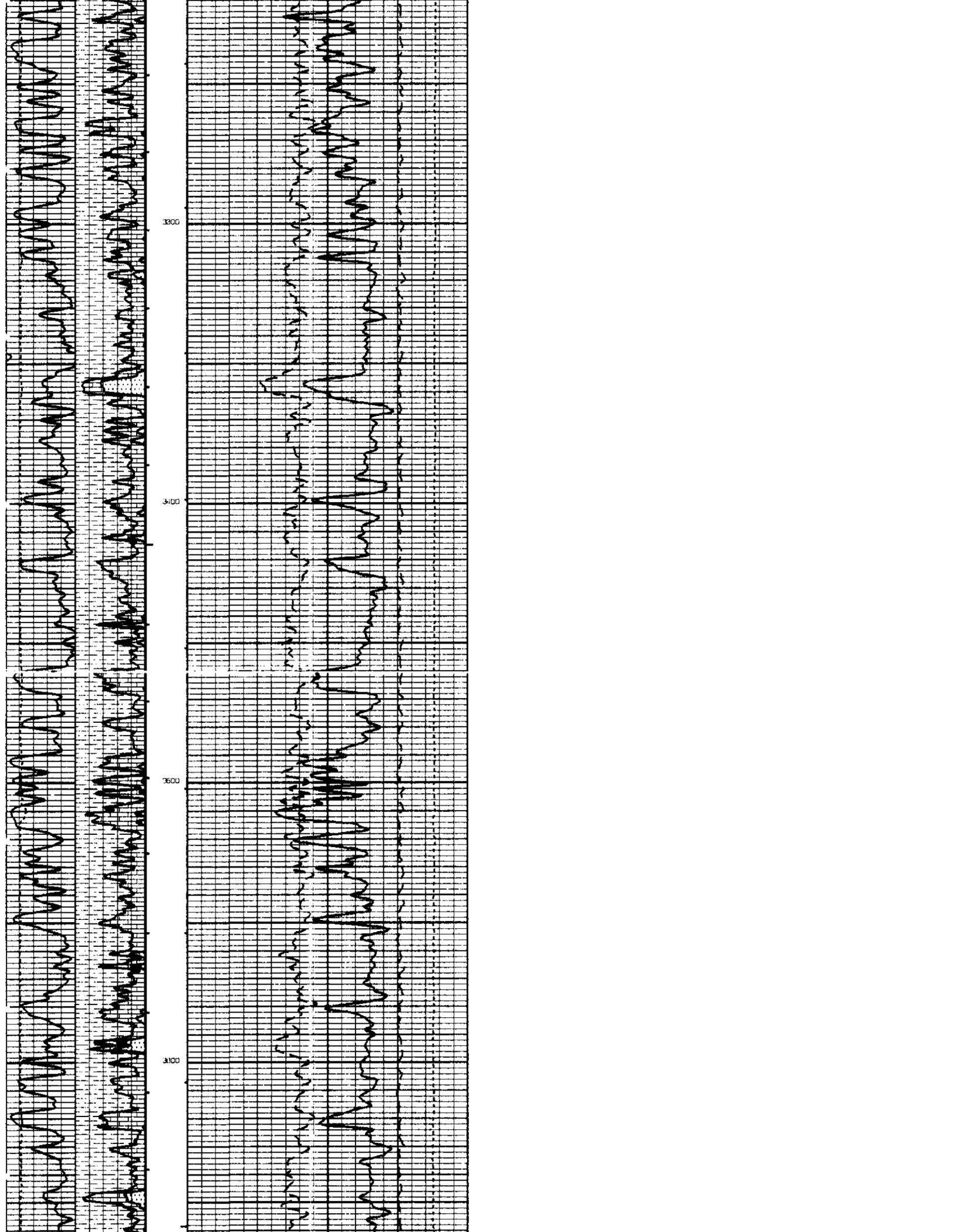


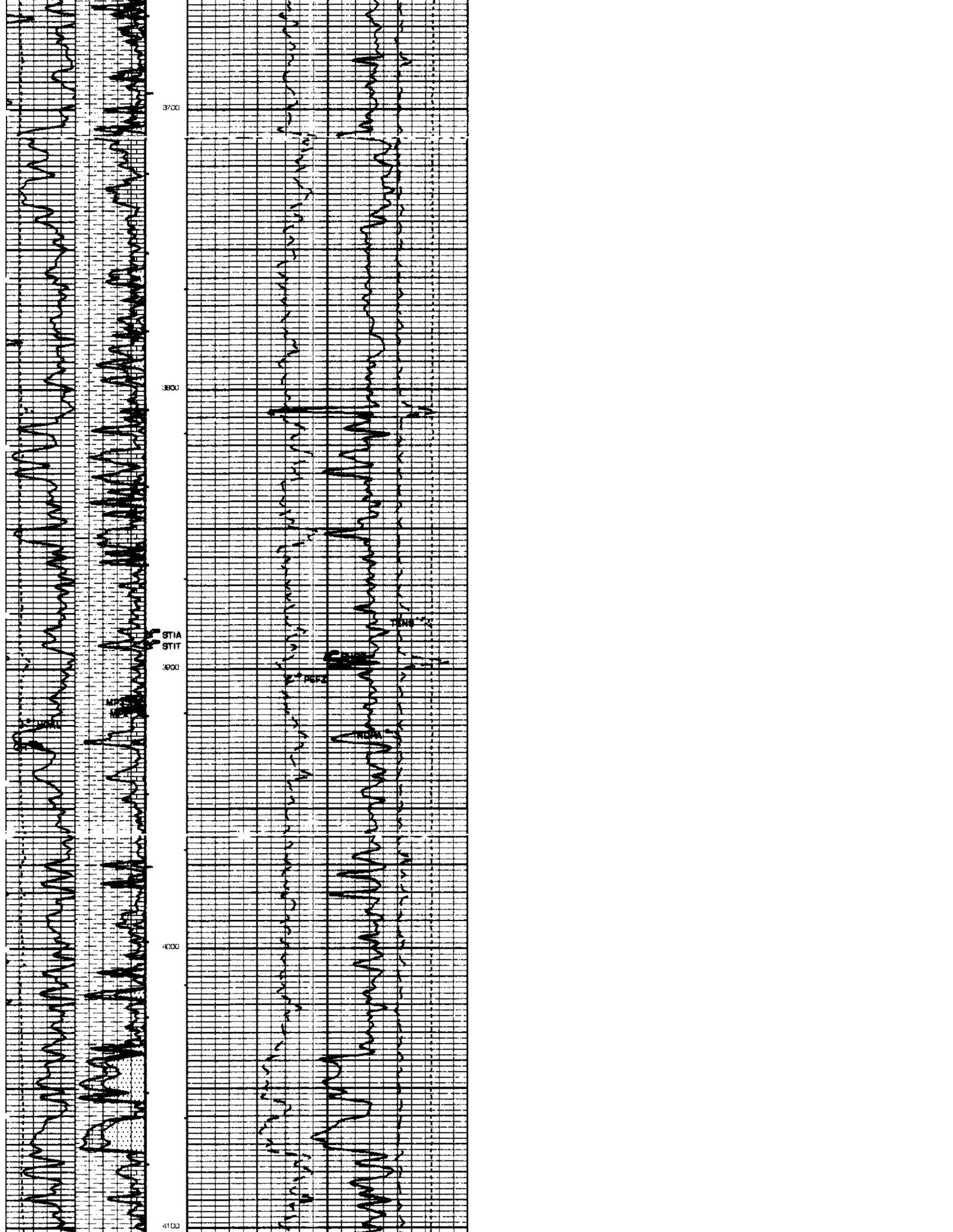


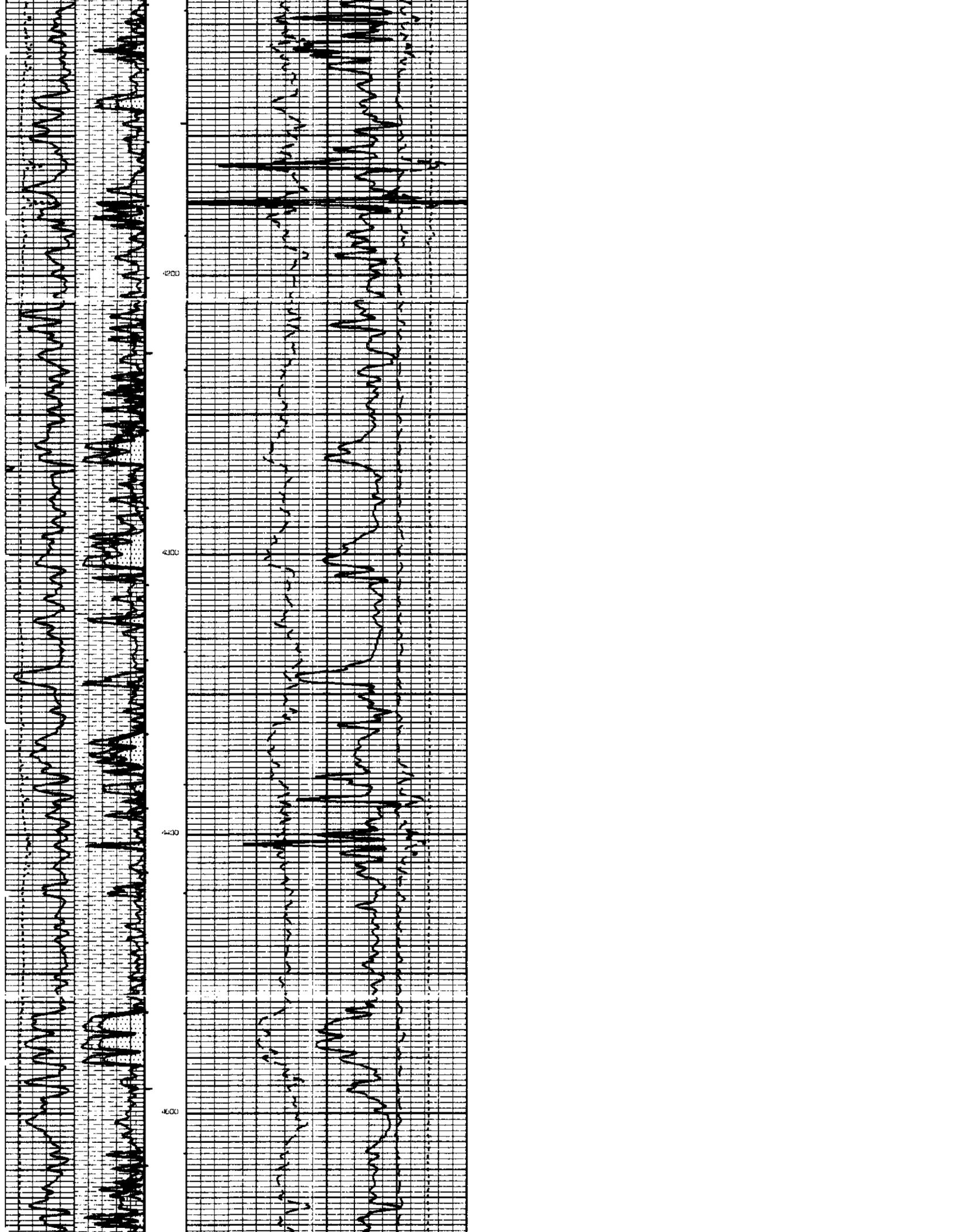


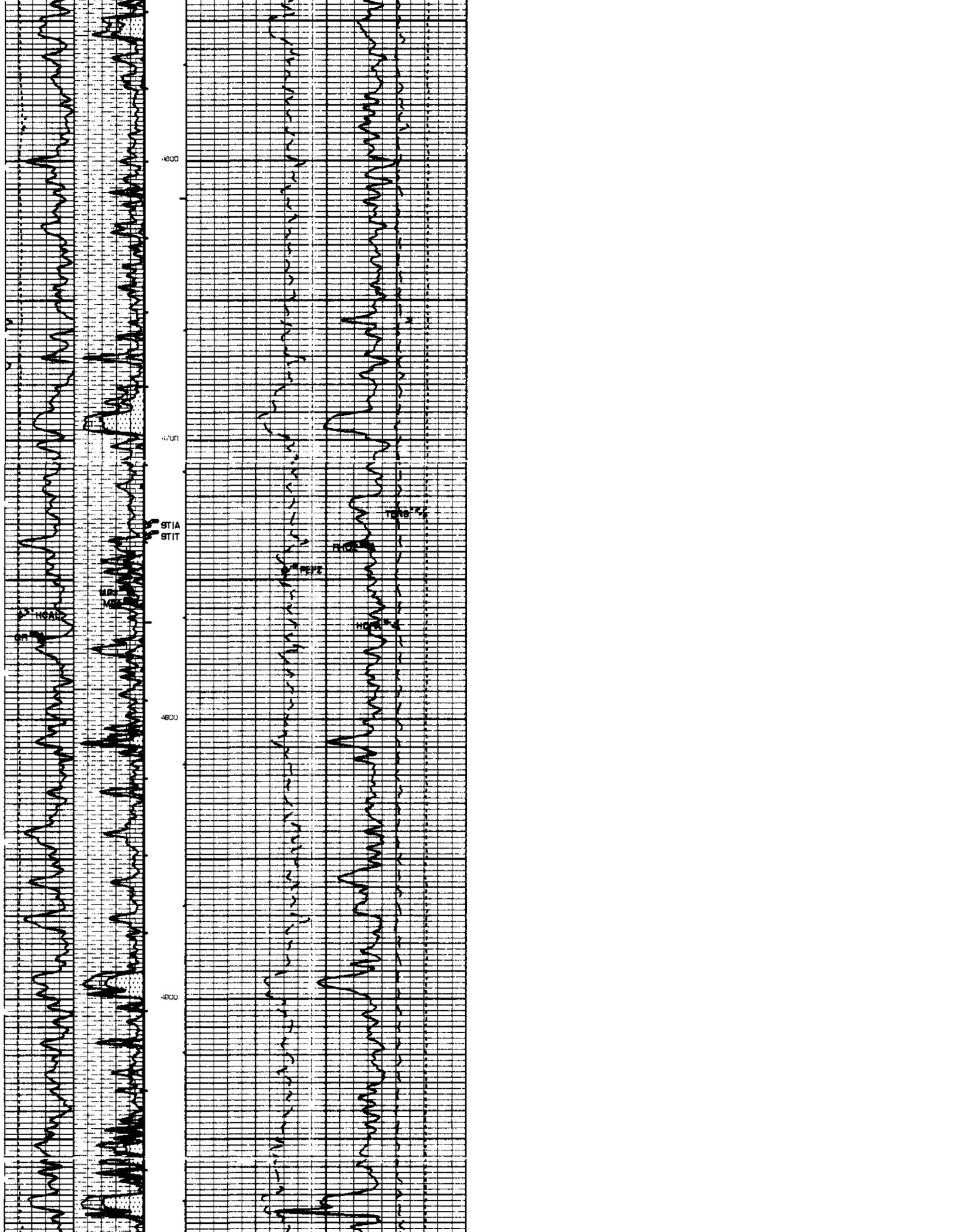


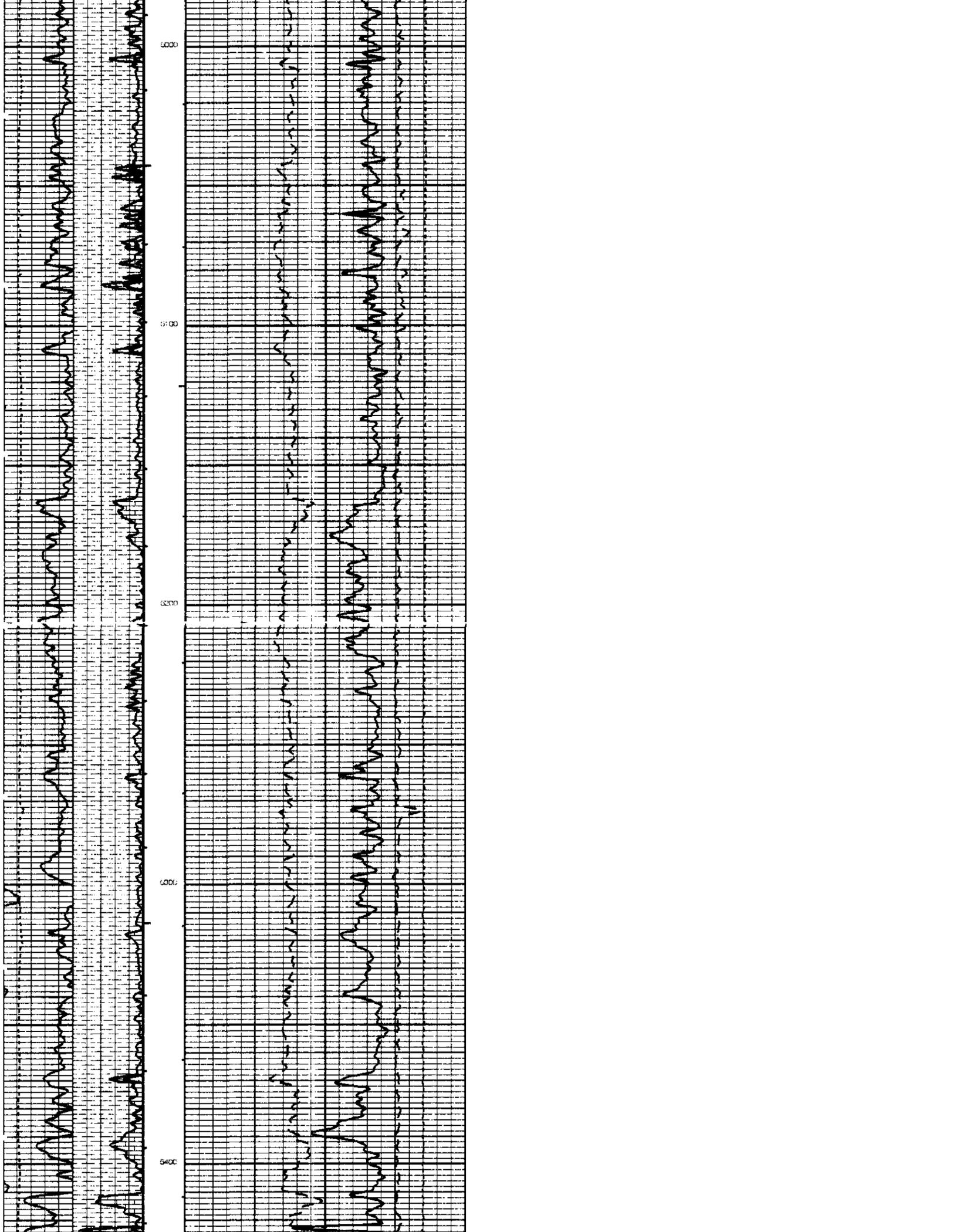


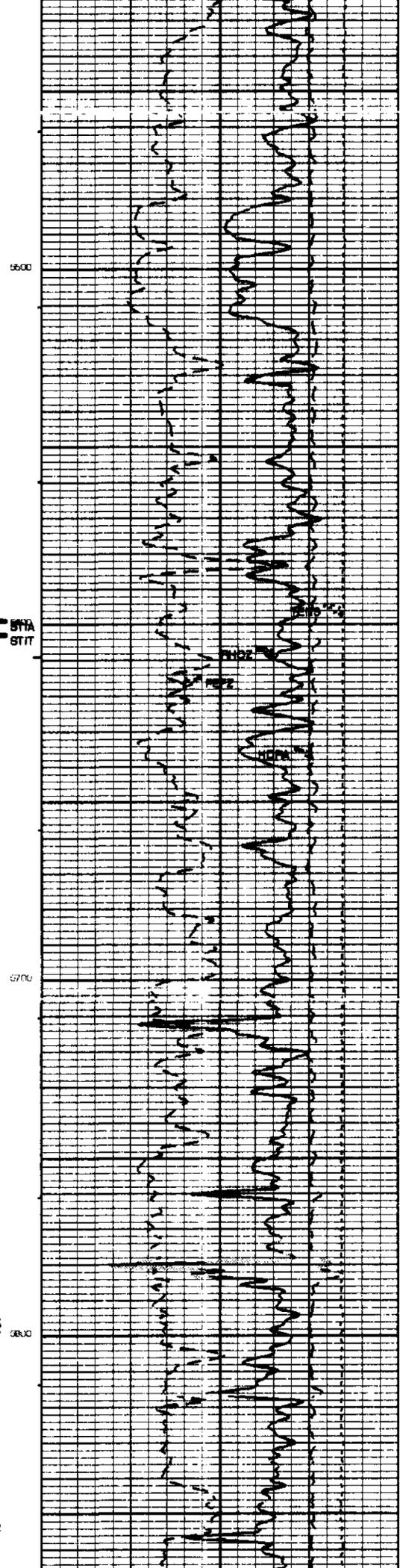
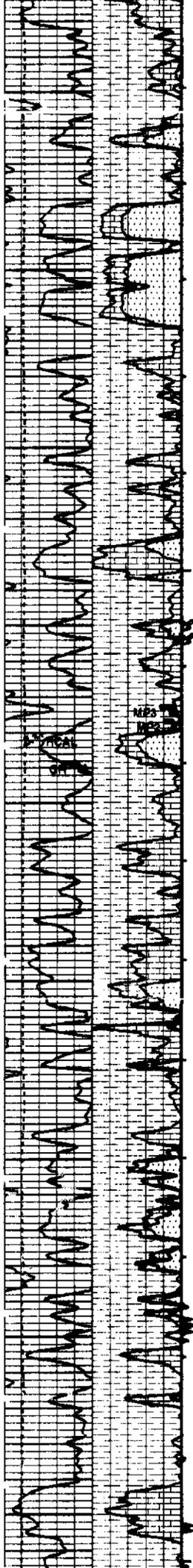










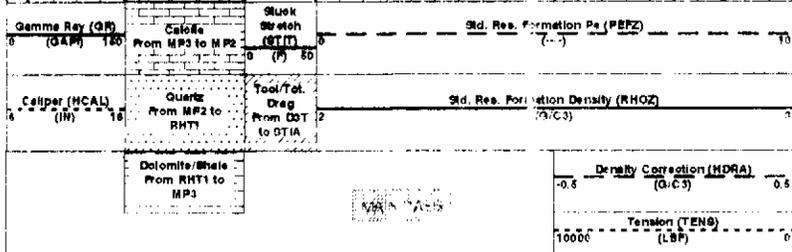
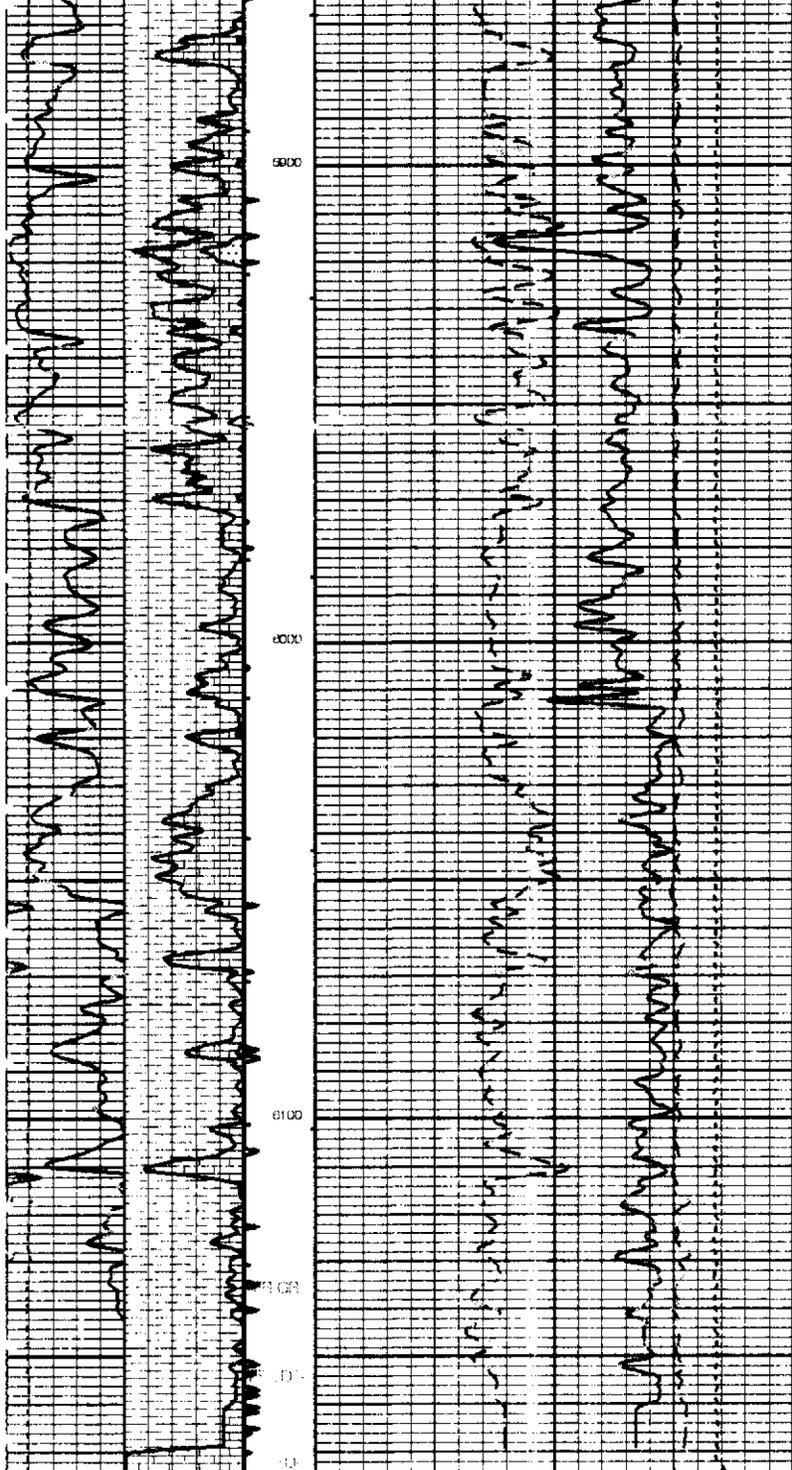


5600

STIA
STIT

5700

5800



PIP SUMMARY

- ┌ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
- ┌ Integrated Cement Volume Minor Pip Every 10 F3
- └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BDPS	Bulk Density Processing Selector	RHOB
BHT	Bottom Hole Temperature (Used in calculations)	150 DEG F
BS	Bit Size	7.875 IN
CLIM	Caliper Limit for Bad Hole	999 IN
CNPS	Corrected Neutron Porosity Selector	NPOR
DFD	Drilling Fluid Density	8.30 LB/G
DHC	Density Hole Correction	88
DOAL	Depth Offset Repeat Analysis	0.0 FT
DRUL	DRHO Upper Limit	999 G/C3
PCAL	Caliper Presence Flag	PRESENT
PCOR	COA Presence Flag	PRESENT
PD	RHO Density	1 G/C3
PEXP	Form Factor Exponent	2
PLDT	LDT Presence Flag	PRESENT
PNUM	Form Factor Numerator	1
PSOH	SOA Presence Flag	ABSENT
QGRD	Geophysical Drag Flag	1.000000e-02 DF/F

GTBE	Generalized Temperature Selection	LINEAR ESTIMATE	
HM PCO	HILT RTSC Measure points correction	NO	
HSC M	HILT Speed Correction Mode	39CD_SpeedCorrect	
HST1	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	SANDSTONE	
NAV	NRDO Density/Po Algorithm Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NRPM	NRDO Processing Mode	StdRes	
NSAR	NRDO Depth Sampling Rate		IN
PMAX	PHI Maximum	60	PU
POUT	Porosity Output Lithology	LIMESTONE	
RQ21	RHO Grain (2-Mineral Model, Min-1)	2.71	Q/C3
RQ22	RHO Grain (2-Mineral Model, Min-2)	2.844	Q/C3
RQ23	RHO Grain (2-Mineral Model, Min-3)	2.877	Q/C3
RQ31	RHO Grain (3-Mineral Model, Min-1)	2.71	Q/C3
RQ32	RHO Grain (3-Mineral Model, Min-2)	2.844	Q/C3
RQ33	RHO Grain (3-Mineral Model, Min-3)	2.877	Q/C3
RWFS	Reactivity of Mud Filtrate Sample	2.2400	OHMM
RTL F	RT Limit Flag	NO LIMIT	
RWF	Reactivity of Free Water	2.000000e-02	OHMM
SHT	Surface Hole Temperature	80	DEGF
STKT	STI Stroke Threshold	2.5	FT
TD	Total Depth	6160	FT
TWS	Temperature of Corneate Water Sample	100.00	DEGF
UP	U Fluid	0.398	B/C3
UM21	U Matrix (2-Mineral Model, Min-1)	13.77	B/C3
UM22	U Matrix (2-Mineral Model, Min-2)	4.779	B/C3
UM23	U Matrix (2-Mineral Model, Min-3)	8.997	B/C3
UM31	U Matrix (3-Mineral Model, Min-1)	13.77	B/C3
UM32	U Matrix (3-Mineral Model, Min-2)	4.779	B/C3
UM33	U Matrix (3-Mineral Model, Min-3)	8.997	B/C3

Format: DENS MIN Vertical Scale: 5' per 100' Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427
DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

Output DLIS Files

DEFAULT	HILTC.008	PH:5	FIELD	15-OCT-1996 08:48
---------	-----------	------	-------	-------------------

Input DLIS Files

DEFAULT	HILTC.007	PH:5	FIELD	15-OCT-1996 08:37	6174.0 FT	5806.7 FT
---------	-----------	------	-------	-------------------	-----------	-----------

Output DLIS Files

DEFAULT	HILTC.008	PH:5	FIELD	15-OCT-1996 08:48
---------	-----------	------	-------	-------------------

Integrated Hole/Cement Volume Summary

Hole Volume : 119.27 F3
 Cement Volume : 61.11 F3 (assuming 5.60 IN casing O.D.)
 Computed from 6180.0 FT to 5808.0 FT using data channel(s) NCAL

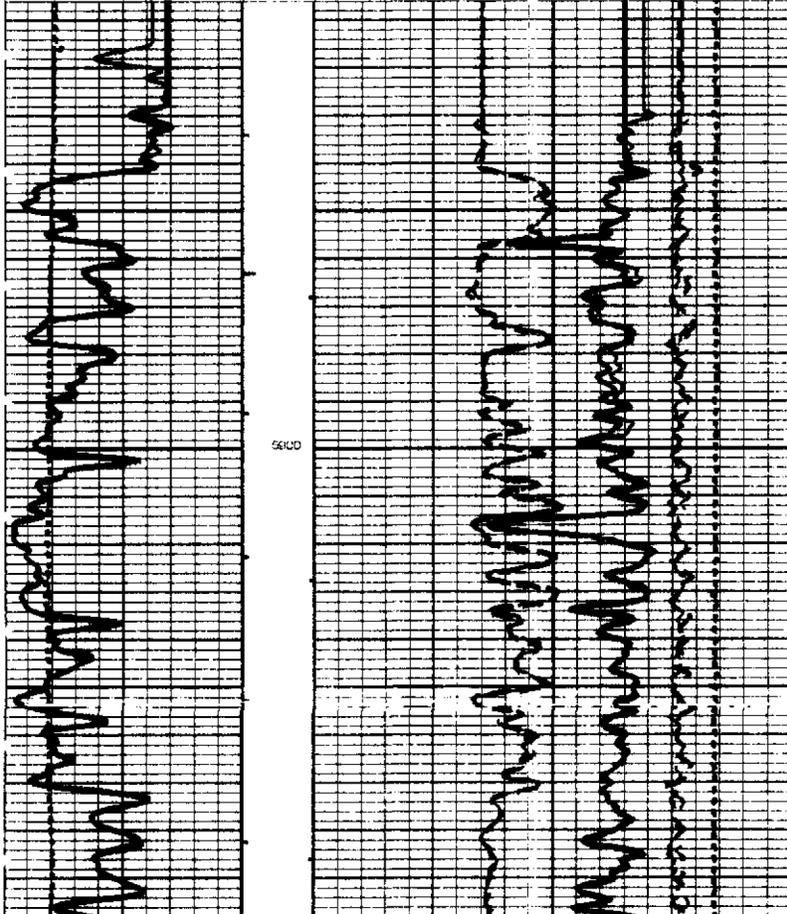
OP System Version: 7C0-427
DBM

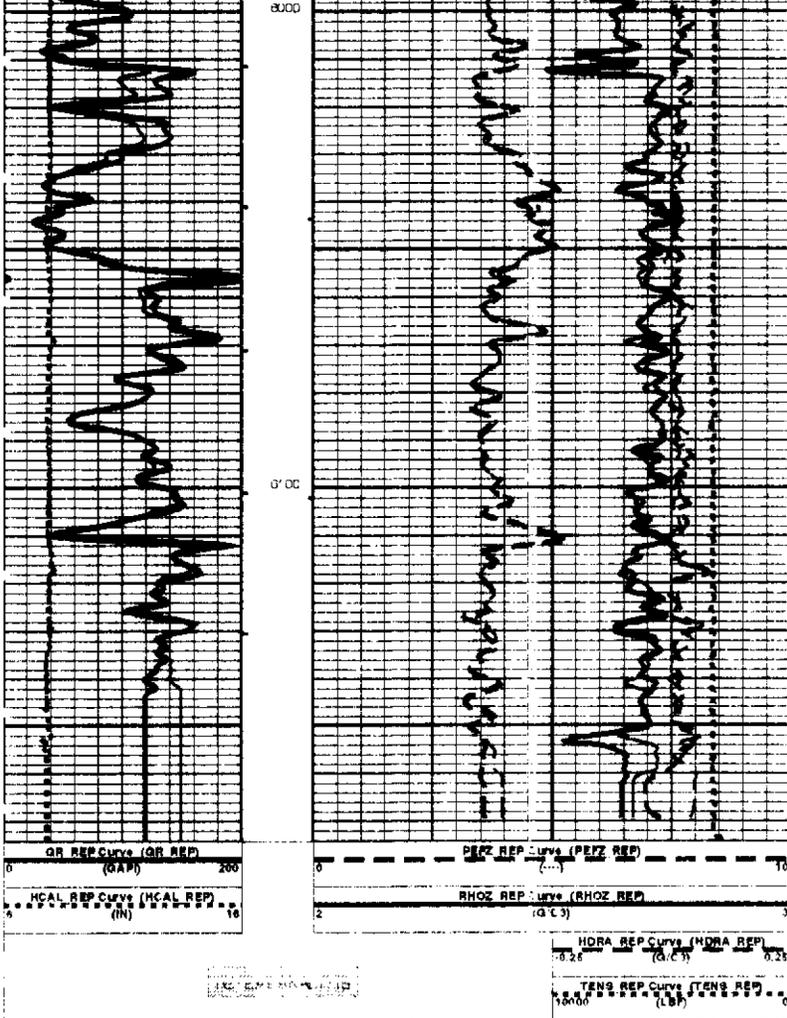
HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

PIP SUMMARY

- ▶ Integrated Hole Volume Minor Pip Every 10 F3
- ▶ Integrated Hole Volume Major Pip Every 100 F3
- ▶ Integrated Cement Volume Minor Pip Every 10 F3
- ▶ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S





PIP SUMMARY
 Integrated Hole Volume Minor Pip Every 10 F3
 Integrated Hole Volume Major Pip Every 100 F3
 Integrated Cement Volume Minor Pip Every 10 F3
 Integrated Cement Volume Major Pip Every 100 F3
 Time Mark Every 60 S

DLIS Name	Description	Value
BS	SR Stem	7.875 IN
DPD	Drilling Fluid Density	8.30 L/B G
DMC	Density Hole Correction	88
DDRL	Depth Offset Repeat Analysis	0.0 FT
HMPCO	HILT RTSC Measure points correction	NO
HSCM	HILT Speed Correction Mode	PCSD SpeedCorrect
HSTI	HILT Uses HILT Acceleration	YES
NAV	HRDD Density/Ps Algorithm Version	1
NMT	HILT Nuclear Mud Type	NOBARITE
NPRM	HRDD Processing Mode	StdRes
NSAR	HRDD Depth Sampling Rate	1 IN

Format: DLIS REP Vertical Scale: F per 100 Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427
 DBM

HILTS-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERY	RPCVX-680

Input DLIS Files					
DEFAULT	HILTC.007	PN:5	FIELD	15-OCT-1996 08:37	5174.0 FT 5805.7 FT

Output DLIS Files					
DEFAULT	HILTC.008	PN:6	FIELD	15-OCT-1996 08:48	

Calibration and Check Summary							
Measurement	Factory	Master	Delta	Age	Pass/Fail	Unit	Unit
High resolution Integrated Logging Tool (ITS) Write Calibration - Electronics Calibration Check - Cal Mag vs Phase							
Meter Calibration out of date Jun 15 08 08 1996 Before 15 08 08 1996							
Triax Cal Magnitude - 0	0	0.6275	0.0295	127	Pass	1/A	1/A
Triax Cal Magnitude - 1	0	1.278	1.076	127	Pass	1/A	1/A
Triax Cal Magnitude - 2	0	0.6344	0.6131	127	Pass	1/A	1/A
Triax Cal Magnitude - 3	0	0.7180	0.7168	127	Pass	1/A	1/A
Triax Cal Magnitude - 4	0	1.342	1.340	127	Pass	1/A	1/A
Triax Cal Magnitude - 5	0	1.854	1.851	127	Pass	1/A	1/A
Triax Cal Magnitude - 6	0	1.953	1.949	127	Pass	1/A	1/A
Triax Cal Magnitude - 7	0	1.393	1.390	127	Pass	1/A	1/A
Phase - 0	0	46.81	57.1	127	Pass	1/A	1/E6
Phase - 1	0	44.71	46.01	127	Pass	1/A	1/E6
Phase - 2	0	40.98	42.29	127	Pass	1/A	1/E6
Phase - 3	0	30.90	31.91	127	Pass	1/A	1/E6
Phase - 4	0	43.97	46.27	127	Pass	1/A	1/E6
Phase - 5	0	42.00	43.40	127	Pass	1/A	1/E6
Phase - 6	0	42.00	43.40	127	Pass	1/A	1/E6
Phase - 7	0	38.45	39.78	127	Pass	1/A	1/E6
High resolution Integrated Logging Tool (ITS) Write Calibration - Electronics Calibration Check - A vs B							
Meter Calibration out of date Jun 15 08 08 1996 Before 15 08 08 1996							
AUT-SPA Plus	983.0	983.0	200.0	127	Pass	1/A	1/A
AUT-SPA Zero	0	-0.2260	0.2039	127	Pass	1/A	1/A
AUT-Temperature Plus	0.9120	0.9136	0.9201	127	Pass	1/A	1/A
AUT-Temperature Zero	0	0.000000	0.001194	127	Pass	1/A	1/A
High resolution Integrated Logging Tool (ITS) Write Calibration - Text Loop Gain Calibration							
Meter Calibration out of date Jun 15 08 08 1996							
Text Loop Gain Magnitude - 0	0	1.016	1/A	127	Pass	1/A	1/A
Text Loop Gain Magnitude - 1	0	1.014	1/A	127	Pass	1/A	1/A
Text Loop Gain Magnitude - 2	0	1.017	1/A	127	Pass	1/A	1/A
Text Loop Gain Magnitude - 3	0	1.015	1/A	127	Pass	1/A	1/A

Phase	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
Test Loop Gain Magnitude	4	0	0.9943	N/A	N/A	N/A	N/A	N/A
Test Loop Gain Magnitude	5	0	1.007	N/A	N/A	N/A	N/A	N/A
Test Loop Gain Magnitude	6	0	1.014	N/A	N/A	N/A	N/A	N/A
Test Loop Gain Magnitude	7	0	1.000	N/A	N/A	N/A	N/A	N/A
Phase	0	0	0.4351	N/A	N/A	N/A	N/A	N/A
Phase	2	0	0.0794	N/A	N/A	N/A	N/A	N/A
Phase	3	0	0.0150	N/A	N/A	N/A	N/A	N/A
Phase	4	0	0.0827	N/A	N/A	N/A	N/A	N/A
Phase	5	0	0.3508	N/A	N/A	N/A	N/A	N/A
Phase	6	0	0.0265	N/A	N/A	N/A	N/A	N/A
Phase	7	0	0.3377	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Bundle Error Correction

Master Calibration of date Jun 15 OR DR 1996

R Bundle Error Correction	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
R Bundle Error Correction	0	0	117.3	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	1	0	162.9	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	2	0	101.9	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	3	0	60.03	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	4	0	24.85	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	5	0	13.28	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	6	0	9.377	N/A	N/A	N/A	N/A	N/A
R Bundle Error Correction	7	0	0.4777	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	0	0	505.4	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	1	0	281.1	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	2	0	103.4	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	3	0	6.335	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	4	0	7.815	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	5	0	3.925	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	6	0	4.035	N/A	N/A	N/A	N/A	N/A
X Bundle Error Correction	7	0	10.95	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Multi-Channel Correction

Master Calibration of date Jun 15 OR DR 1996

Course - Mag. Real. Imag.	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
Course - Mag. Real. Imag.	0	0	1.100	N/A	N/A	N/A	N/A	N/A
Course - Mag. Real. Imag.	1	0	1.100	N/A	N/A	N/A	N/A	N/A
Course - Mag. Real. Imag.	2	0	1.100	N/A	N/A	N/A	N/A	N/A
Fine - Mag. Real. Imag.	0	0	1.078	N/A	N/A	N/A	N/A	N/A
Fine - Mag. Real. Imag.	1	0	1.078	N/A	N/A	N/A	N/A	N/A
Fine - Mag. Real. Imag.	2	0	1.078	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Slab Measurement Summary

Before Oct 15 03 13 1996

BS Window Ratio	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
BS Window Ratio	0.9774	N/A	0.9804	N/A	N/A	N/A	N/A	N/A
BS Window Sum	101.00	N/A	163.20	N/A	N/A	N/A	N/A	N/A
SS Window Ratio	0.4231	N/A	0.4718	N/A	N/A	N/A	N/A	N/A
SS Window Sum	11670	N/A	11780	N/A	N/A	N/A	N/A	N/A
LS Window Ratio	0.2497	N/A	0.2890	N/A	N/A	N/A	N/A	N/A
LS Window Sum	6.10	N/A	1670	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Pile-on (Input High Voltage) Data

Before Oct 15 03 13 1996

BS PM High Voltage (Command)	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
BS PM High Voltage (Command)	1436	N/A	1430	N/A	N/A	N/A	N/A	N/A
SS PM High Voltage (Command)	1646	N/A	1650	N/A	N/A	N/A	N/A	N/A
LS PM High Voltage (Command)	1873	N/A	1860	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Crystal Quality Performance Data

Before Oct 15 03 13 1996

BS Crystal Resolution	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
BS Crystal Resolution	10.71	N/A	12.47	N/A	N/A	N/A	N/A	N/A
SS Crystal Resolution	9.501	N/A	9.611	N/A	N/A	N/A	N/A	N/A
LS Crystal Resolution	9.602	N/A	9.670	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - MFL Calibration

Before Oct 15 03 15 1996

Raw BC Resitivity	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
Raw BC Resitivity	3675	N/A	3654	N/A	N/A	N/A	N/A	N/A
Raw SS Resitivity	3031	N/A	3013	N/A	N/A	N/A	N/A	N/A
Raw LS Resitivity	1930	N/A	1875	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - HLT Channel Calibration

Before Oct 15 03 14 1996

HLT Stripper Zero Measurement	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
HLT Stripper Zero Measurement	8.000	N/A	7.821	N/A	N/A	N/A	N/A	N/A
HLT Stripper Plus Measurement	12.00	N/A	12.11	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Gamma Calibration

Before Oct 15 03 10 1996

Gamma Ray Background	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
Gamma Ray Background	40.00	N/A	36.80	N/A	N/A	N/A	N/A	N/A
Gamma Ray (Log. Avg)	180.4	N/A	180.4	N/A	N/A	N/A	N/A	N/A
Gamma Ray (Corrected)	145.0	N/A	145.0	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Zero Measurement

Before Aug 2 02 04 1996

OSTC Background	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
OSTC Background	25.80	N/A	26.20	N/A	N/A	N/A	N/A	N/A
OSTC Background	31.10	N/A	31.10	N/A	N/A	N/A	N/A	N/A

High resolution Integrated Logging Tool (ITS) Website Calibration - Accessory Data Calibration

Before Oct 15 DR 26 1996

Z Axis Accelerator	Value	Unit	Phase	Value	Unit	Phase	Value	Unit
Z Axis Accelerator	2.19	N/A	2.18	N/A	N/A	N/A	N/A	N/A

The OST Master Calibration Was Done With The Following Parameters

OST-B Water Temperature = 83.0 DEGR
 Thermal Housing Size = 3.375 IN

High resolution Integrated Logging Tool (ITS) Equipment Identification

Primary Equipment	Serial Number	Phase	Value	Unit
Array Induction Tool (H)	AT H			
Array Induction Sonde	APIS - HA			
HLT High Resolution Mechanical Sonde	HRMS - B			
HLT 360 Gamma Ray Detector	HR360			
HLT Nuclear Back Scatter Detector	HLT -			
HLT Nuclear Short Spacing Detector	HLT -			
HLT Nuclear Long Spacing Detector	HLT -			
Motor Dynamically Focused Load Device	MOFL			

High resolution Integrated Logging Tool (ITS) Website Calibration

Master Calibration of date Jun 15 OR DR 1996

Phase	Value	Thru Cal Magnitude	Phase	Value	Phase	Value	Phase	Value
Master	0.8206		0.8943	55.81				
Before	0.8206		57.11					
Master	1.078		1.077	54.71				
Before	1.078		56.01					
Master	0.8344		0.8331	50.89				
Before	0.8331		52.29					
Master	0.7182		0.7349	50.20				
Before	0.7182		51.51					
Master	1.040		1.037	43.40				
Before	1.040		44.21					
Master	1.054		1.057	43.09				
Before	1.051		43.40					
Master	1.053		1.054	42.89				
Before	1.049		43.40					
Master	1.022		1.431	38.44				
Before	1.020		38.78					
Master	85.80 %	140.0 %	Non 80.00					
Before	85.80 %	140.0 %	Non 80.00					

High resolution Integrated Logging Tool (ITS) Website Calibration

Master Calibration of date Jun 15 OR DR 1996

Phase	Value	Phase	Value	Phase	Value	Phase	Value
Master	993.0	Master	993.0	Master	993.0	Master	993.0
Before	993.0	Before	993.0	Before	993.0	Before	993.0
OSTC Background	20.5						
OSTC Background	20.5						
Phase	AT-H Temperature Plus - V	Phase	AT-H Temperature Zero - V	Phase	AT-H Temperature Zero - V	Phase	AT-H Temperature Zero - V
Master	0.0288	Master	0.0288	Master	0.0288	Master	0.0288
Before	0.0288	Before	0.0288	Before	0.0288	Before	0.0288

Phase	Before	After	Value	Phase	Before	After	Value
0	0.000	0.000	0.000	0	0.000	0.000	0.000
1	0.000	0.000	0.000	1	0.000	0.000	0.000
2	0.000	0.000	0.000	2	0.000	0.000	0.000

Master Calibration out of date Jun 15 08:08 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration						
Test Loop Gain Correction						
Log	Value	Test Loop Gain Magnitude V	Phase	Phase	Phase	Phase
0	1.016	1.000	1.040	1.000	0	0.000
1	1.014	1.000	1.040	1.000	0	0.000
2	1.017	1.000	1.040	1.000	0	0.000
3	1.015	1.000	1.040	1.000	0	0.000
4	1.014	1.000	1.040	1.000	0	0.000
5	1.017	1.000	1.040	1.000	0	0.000
6	1.014	1.000	1.040	1.000	0	0.000
7	1.020	1.000	1.040	1.000	0	0.000

Master Calibration out of date Jun 15 08:08 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration						
Gain Error Correction						
Log	Value	R Shave Error Correction MVM	Value	X Shave Error Correction MVM	Value	Value
0	117.3	88.0	119.0	22.0	0	22.0
1	102.8	124.0	150.0	204.0	82.0	0
2	107.8	88.0	119.0	150.0	113.1	0
3	100.0	19.0	84.0	48.0	297.0	0
4	94.35	15.0	24.0	34.0	21.0	0
5	113.08	4.0	14.0	24.0	40.0	0
6	93.77	2.0	10.0	18.0	70.0	0
7	94.77	5.0	0	5.0	30.0	0

Master Calibration out of date Jun 15 08:08 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration						
Mag Gain Correction						
Log	Value	Coars. Mag. Res. mag	Value	Fine Mag. Res. mag	Value	Value
0	1.100	0.800	1.000	1.400	0.800	1.000
1	1.100	0.800	1.000	1.400	0.800	1.000
2	1.100	0.800	1.000	1.400	0.800	1.000

Master Calibration out of date Jun 15 08:08 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration											
BIS Measurement Summary											
Phase	BIS Window Ratio	Value	Phase	BIS Window Ratio	Value	Phase	LS Window Ratio	Value	Phase	LS Window Ratio	Value
Before	0.974	1.000	0.947	0.974	0.991	0.244	0.250	0.244	0.244	0.250	0.244
After	0.974	1.000	0.947	0.974	0.991	0.244	0.250	0.244	0.244	0.250	0.244

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration											
Photo diode High Voltage Calibration											
Phase	BIS PM High Voltage (Command) V	Value	Phase	BIS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
After	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration											
PSL Quality Resolutions Calibration											
Phase	PS Channel Resolution %	Value	Phase	PS Channel Resolution %	Value	Phase	LS Channel Resolution %	Value	Phase	LS Channel Resolution %	Value
Before	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
After	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration											
MCL Calibration											
Phase	Raw BIS Res. (0-4UM)	Value	Phase	Raw BIS Res. (0-4UM)	Value	Phase	Raw BIS Res. (0-4UM)	Value	Phase	Raw BIS Res. (0-4UM)	Value
Before	395	395	395	395	395	395	395	395	395	395	395
After	395	395	395	395	395	395	395	395	395	395	395

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration							
HLT Gain Calibration							
Phase	HLT Gain Zero Measurement IT	Value	Phase	HLT Gain Plus Measurement IT	Value	Phase	Value
Before	0.0	7.89	Before	12.0	12.1	After	12.1
After	0.0	7.89	After	12.0	12.1	Before	12.1

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration											
Dark Current Calibration											
Phase	Dark Bias Background (AP)	Value	Phase	Dark Bias (0-100%)	Value	Phase	Dark Bias (0-100%)	Value	Phase	Dark Bias (0-100%)	Value
Before	30.0	30.0	Before	104.0	104.0	Before	104.0	104.0	Before	104.0	104.0
After	30.0	30.0	After	104.0	104.0	After	104.0	104.0	After	104.0	104.0

Before Oct 12 03 13 1999

High resolution Integrated Logging Tool (ITL) STS Wavels Calibration							
Dark Current Calibration							
Phase	Dark Bias Background (AP)	Value	Phase	Dark Bias (0-100%)	Value	Phase	Value
Before	30.0	30.0	Before	104.0	104.0	Before	104.0
After	30.0	30.0	After	104.0	104.0	After	104.0

Phase	ZTC Background	SPR	Value	Phase	ZTC Background	SPR	Value
Before			25.90	After			26.70
Before			24.70	After			27.1
4000	25.90	4070		4000	26.70	4070	
Mean	Mean	Mean		Mean	Mean	Mean	

Date: Aug 5 08:04:1999

Hydrex Litho Registered Logging Tool 0178			
Website: Calibrat			
Appropriate Calibration			
Phase	Z Area Acceleration	SPR	Value
Before			39.06
After			32.90
4000			
Mean	Mean	Mean	

Date: Aug 12 08:30:1999

PETROGLYPH CALIBRATION		DEPTH (METER)	DEPTH (FEET)
6154	6154 F	6154	6154 F
6172	6172 F	6172	6172 F
6180	6180 F	6180	6180 F
6090	6090 F	6090	6090 F
6091	6091 F	6091	6091 F
6088	6088 F	6088	6088 F

**COMPENSATED NEUTRON
LITHO-DENSITY
GAMMA RAY**

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1 OS1: CNT/LDT OS2: OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
---	---

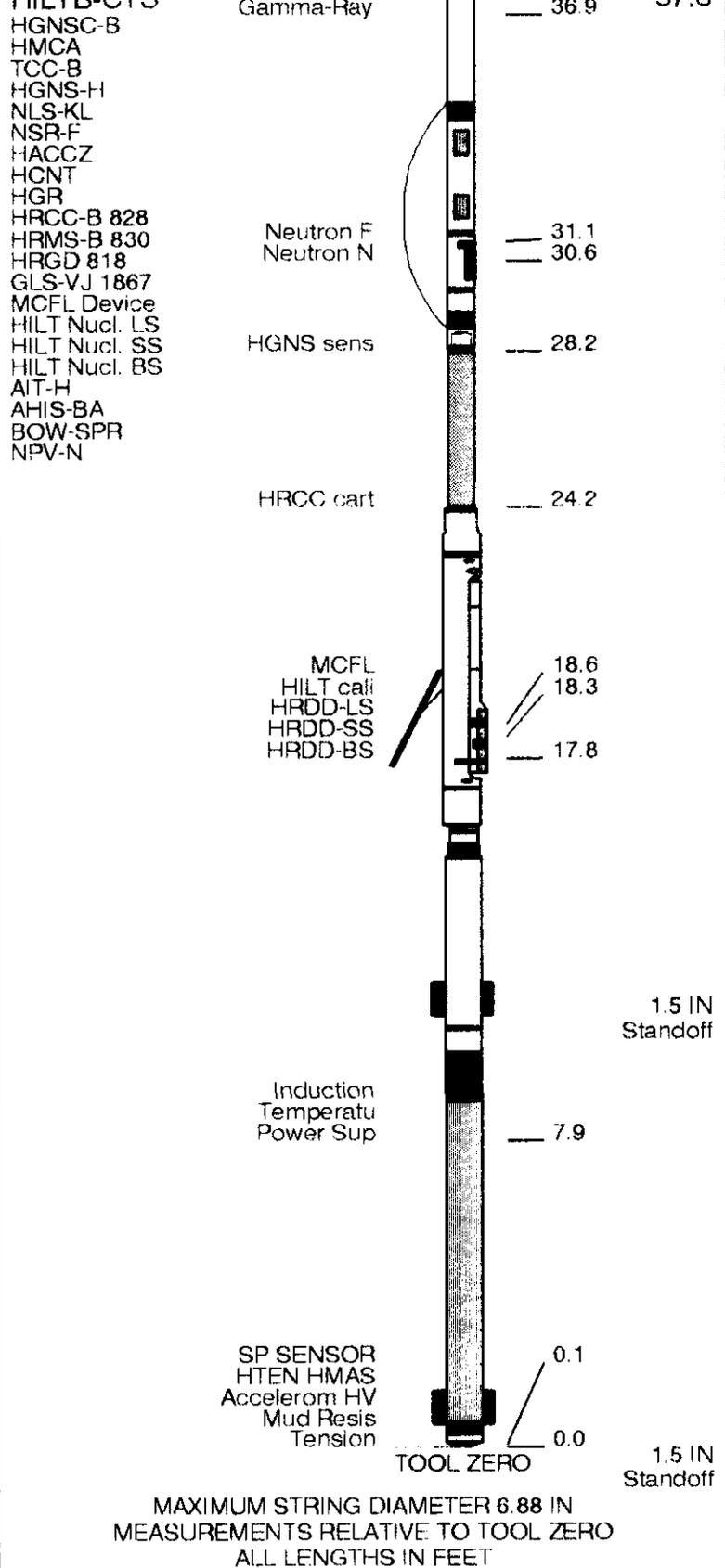
REMARKS: RUN NUMBER 1 THANK YOU FOR CHOOSING SCHLUMBERGER THIS IS THE PLATFORM EXPRESS TOOLSTRING. 1.125" STANDOFF RUN ON AITH	REMARKS: RUN NUMBER 2
---	-----------------------

CREW: J. RIXEY RUN 1 SERVICE ORDER #: 646605 PROGRAM VERSION: 7C0-427 FLUID LEVEL:	RUN 2 SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL:				
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 SURFACE EQUIPMENT TCM-AB GSR-U/Y NCT-B CNB-AB NCS-VB	RUN 2
--	-------

DOWNHOLE EQUIPMENT			
PEH-A PEH-A		40.8	
AH-64 AH-64	HGNS HTEM HMCA TelStatus CTEM	 39.0	
HILTRCTS		37.6 37.6	



Output DLIS Files

DEFAULT HILTC .008 FN:6 FIELD 15-OCT-1996 08:48 6174.0 FT 42.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2152.00 F3

Cement Volume = 1203.43 F3 (assuming 5.50 IN casing O.D.)

Computed from 6160.0 FT to 411.0 FT using data channel(s) HCAL

Changed Parameter Summary

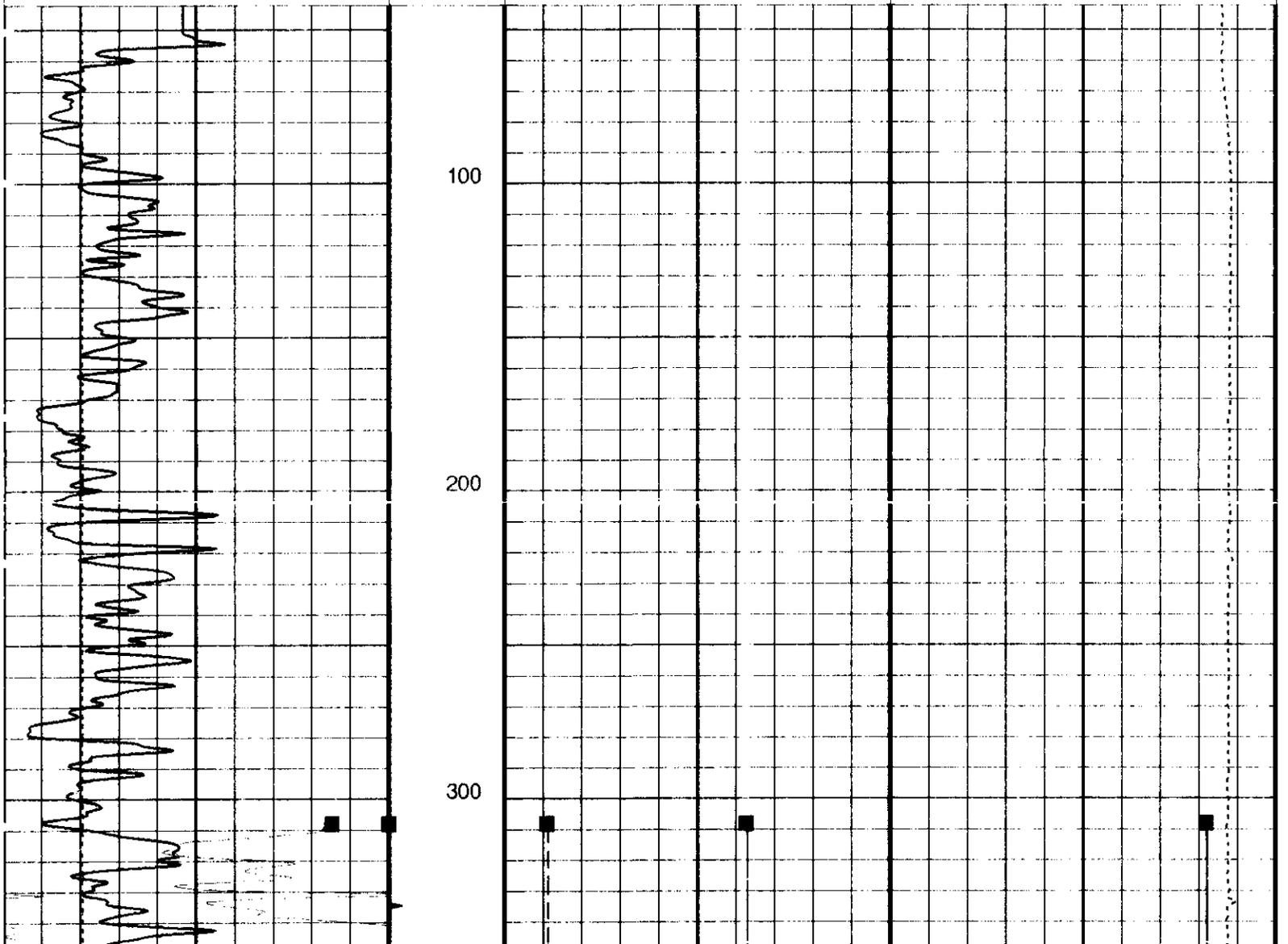
DLIS Name	New Value	Previous Value	Depth & Time
BS	7.875 IN	7.875 IN	4576.2 09:26:27

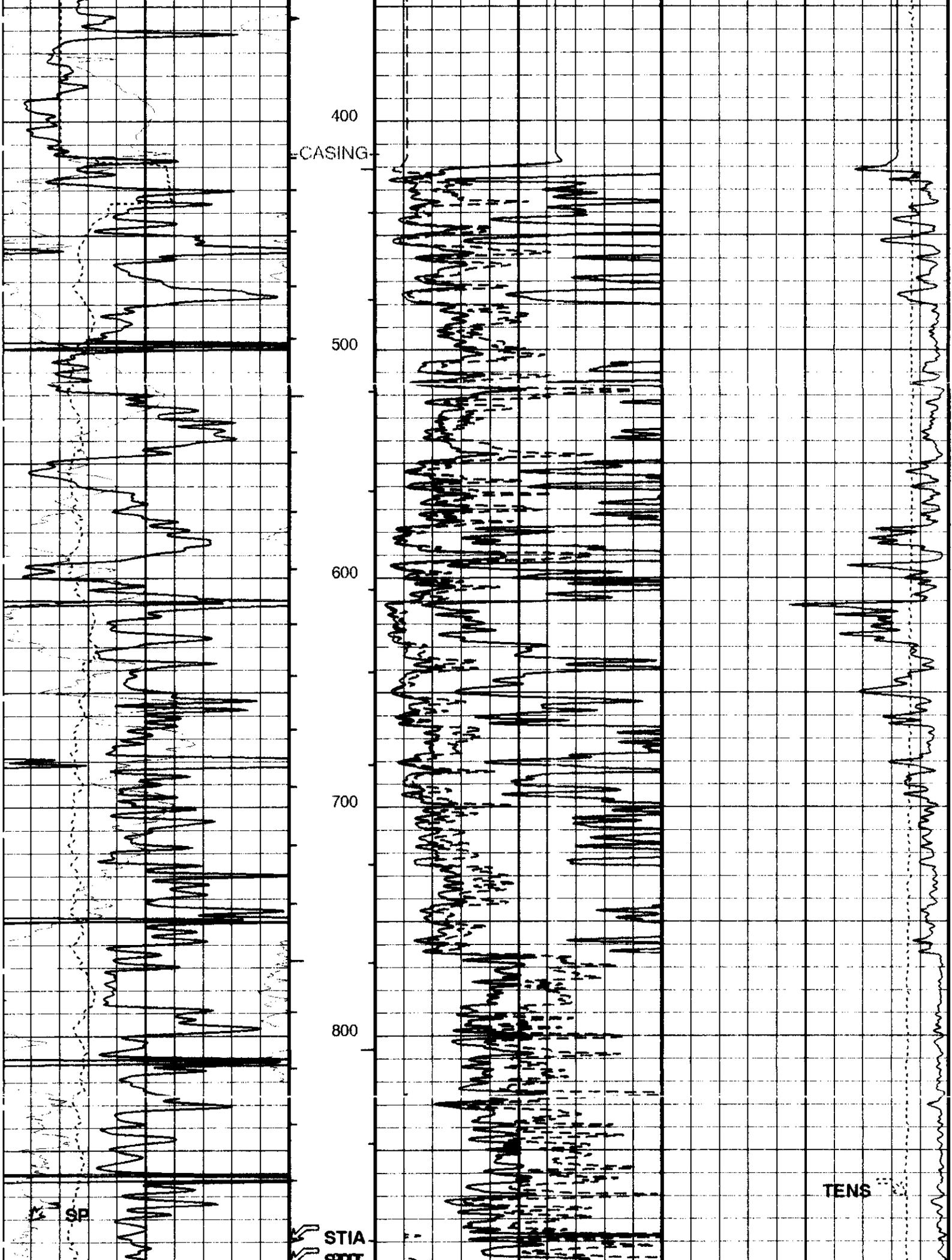
PIP SUMMARY

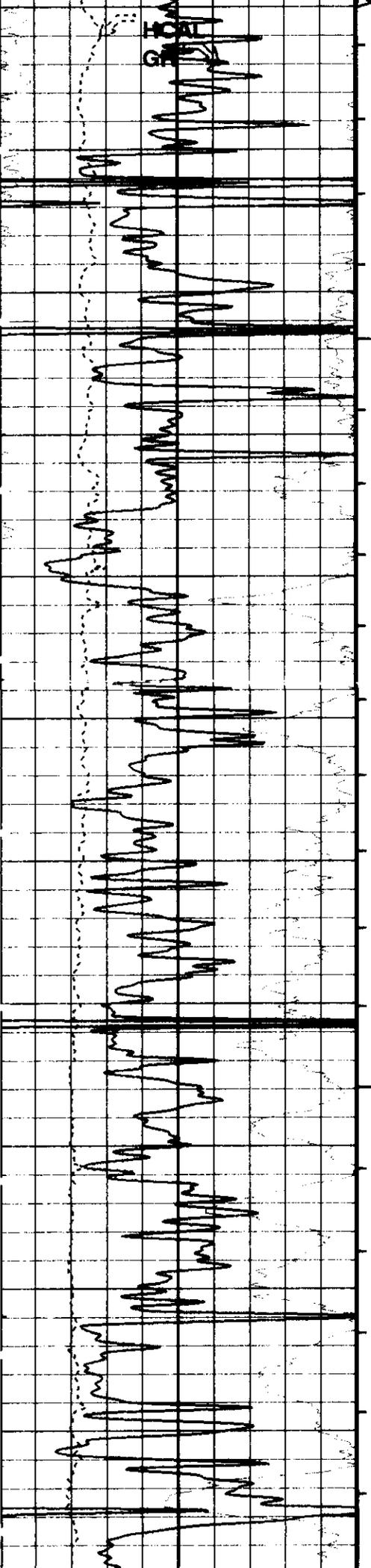
- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

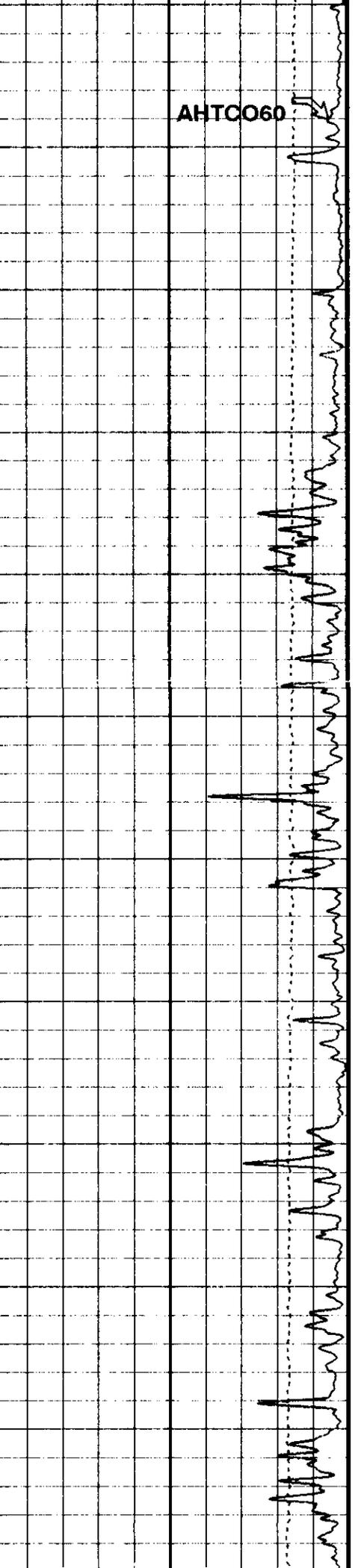
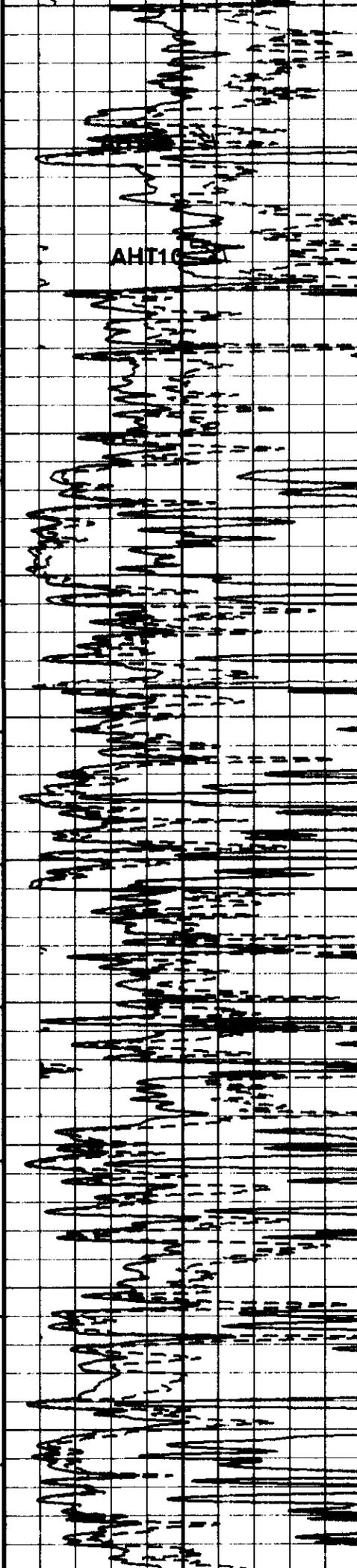
6	Caliper (HCAL) (IN)	16	Tool/Tot. Drag From D3T to STIA	0	AIT-H 60 Inch Investigation (AHT60) (OHMM)	100	MAIN PASS
0	Gamma Ray (GR) (GAPI)	200	Cable Drag From STIA to STIT	0	AIT-H 10 Inch Investigation (AHT10) (OHMM)	20	Tension (TENS) (LBF)
-80	SP (SP) (MV)	20	Stuck Stretch (STIT) (F) 50	0	AIT-H 10 Inch Investigation (AHT10) (OHMM)	100	AIT-H 60 Inch Investigation Conductivity (AHTCO60) (MM/M)
							500

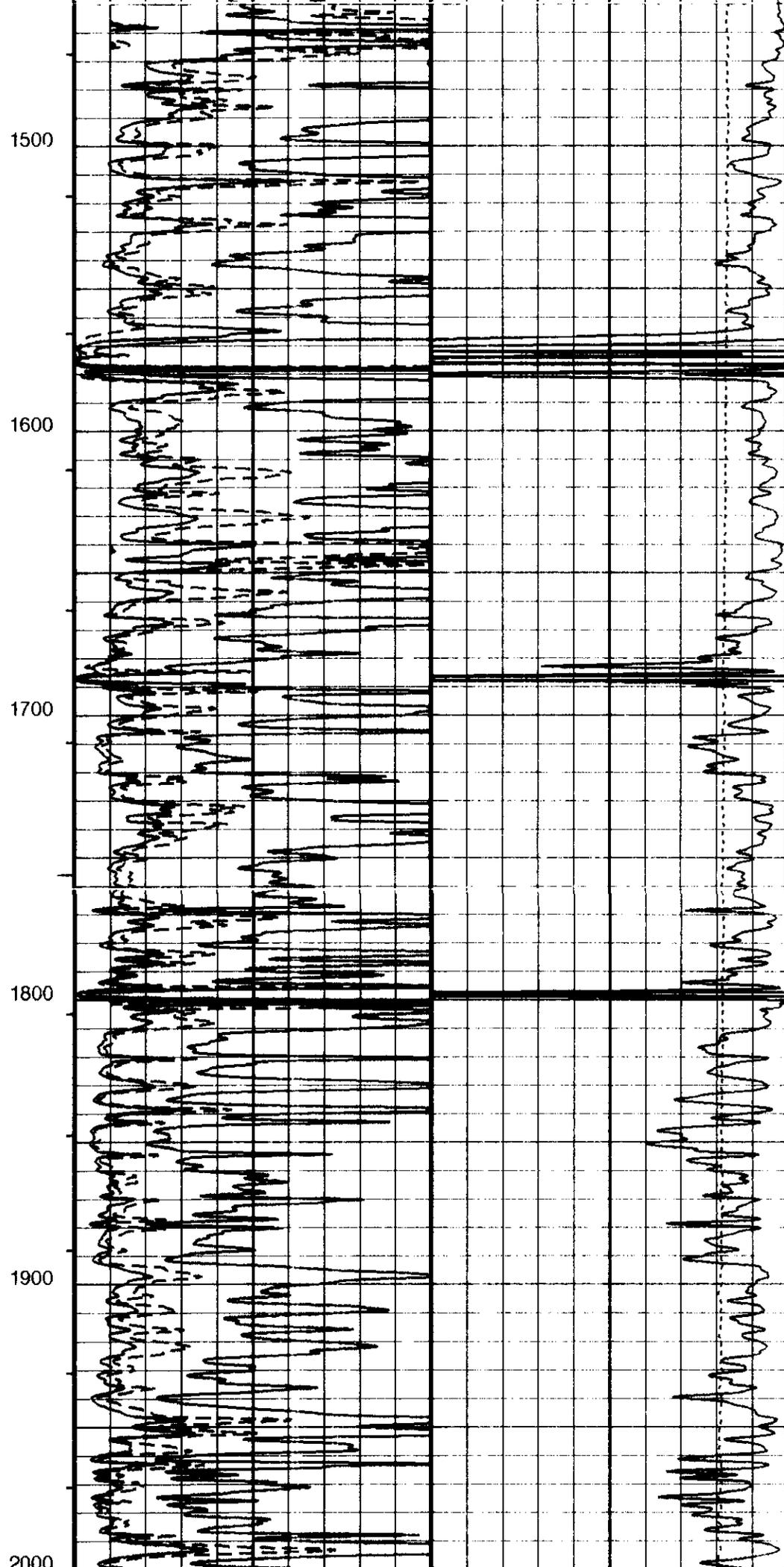
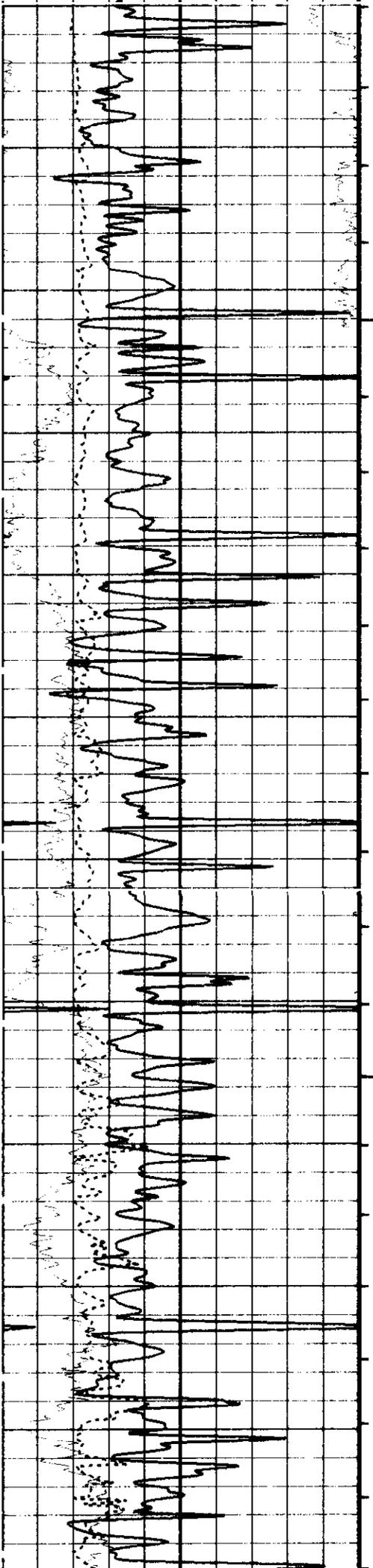


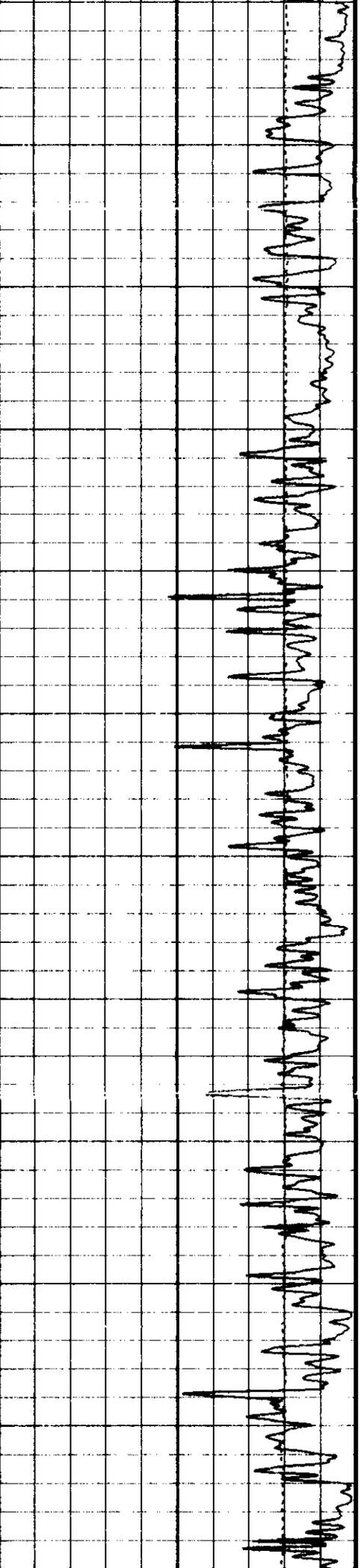
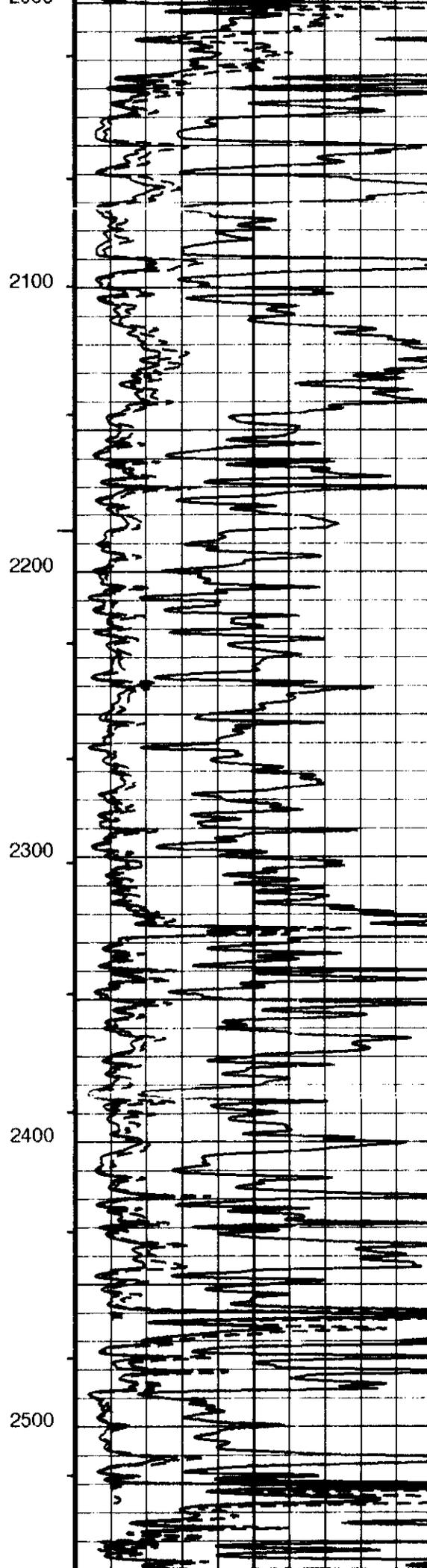
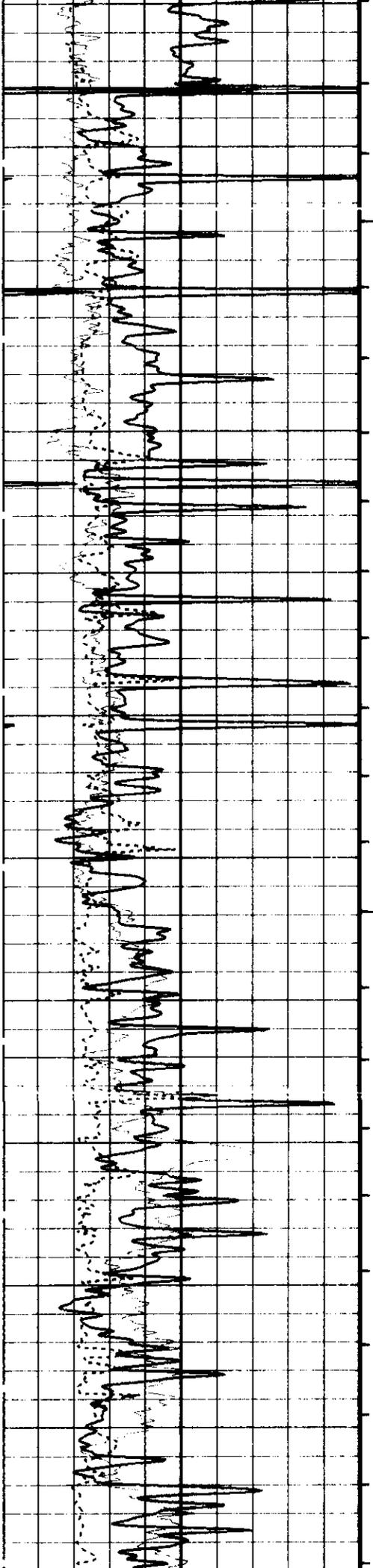




900
1000
1100
1200
1300
1400







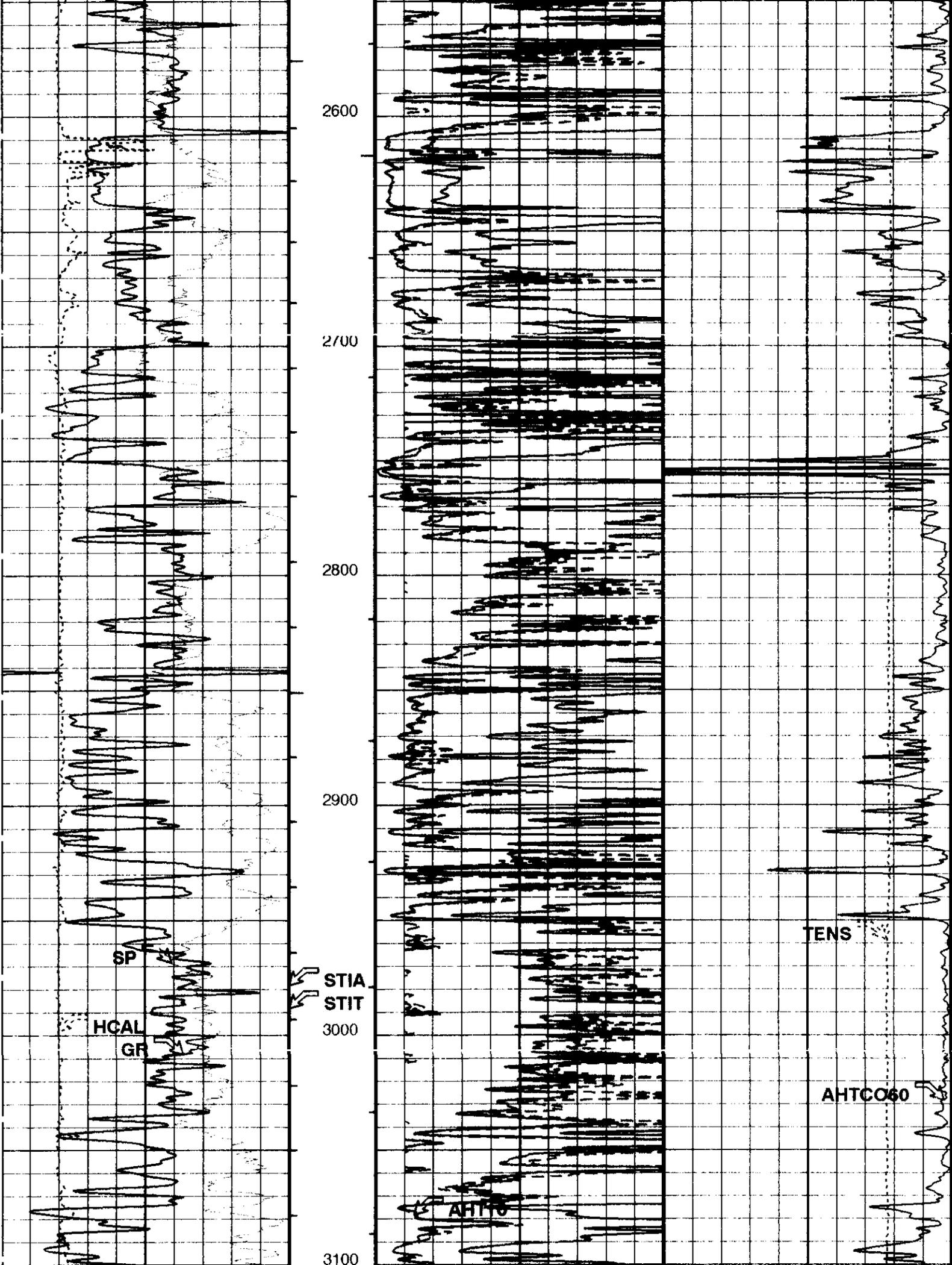
2100

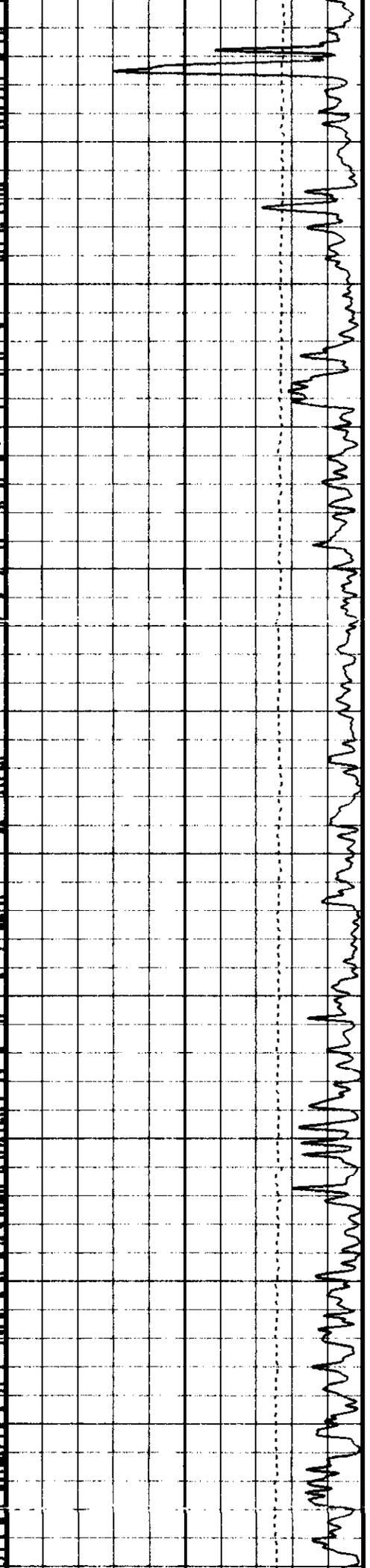
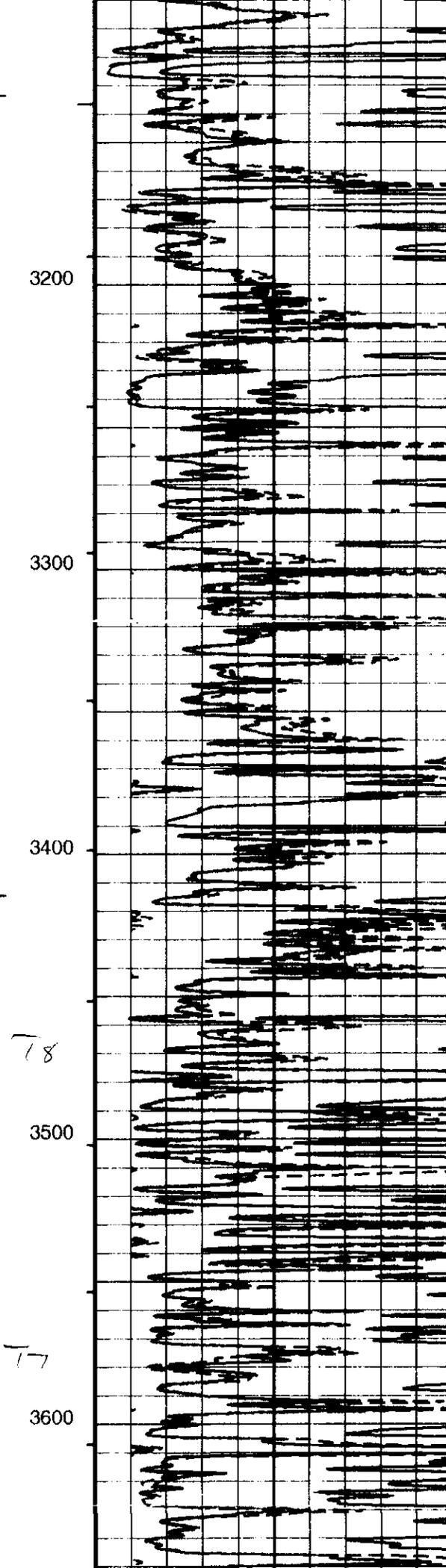
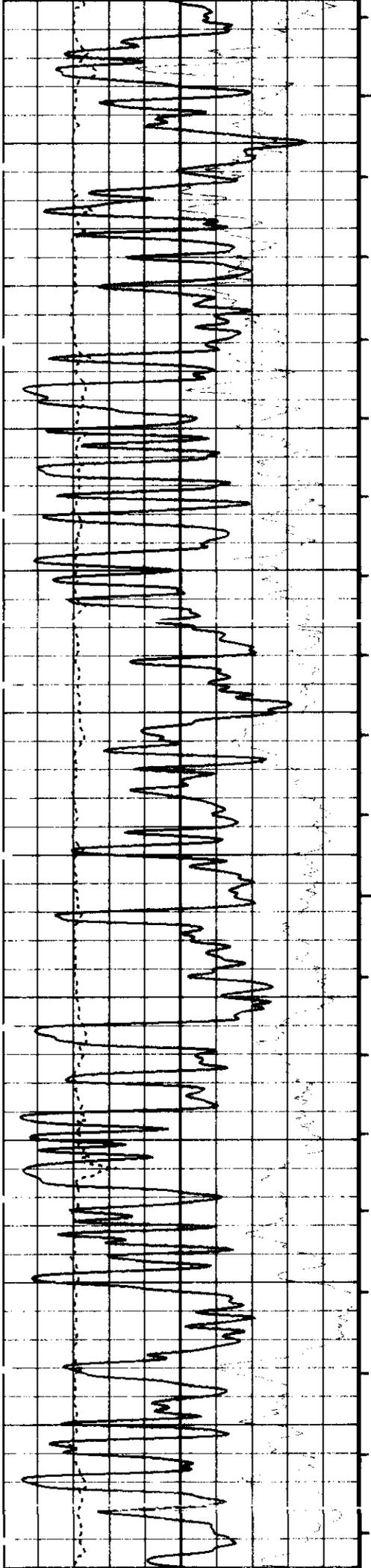
2200

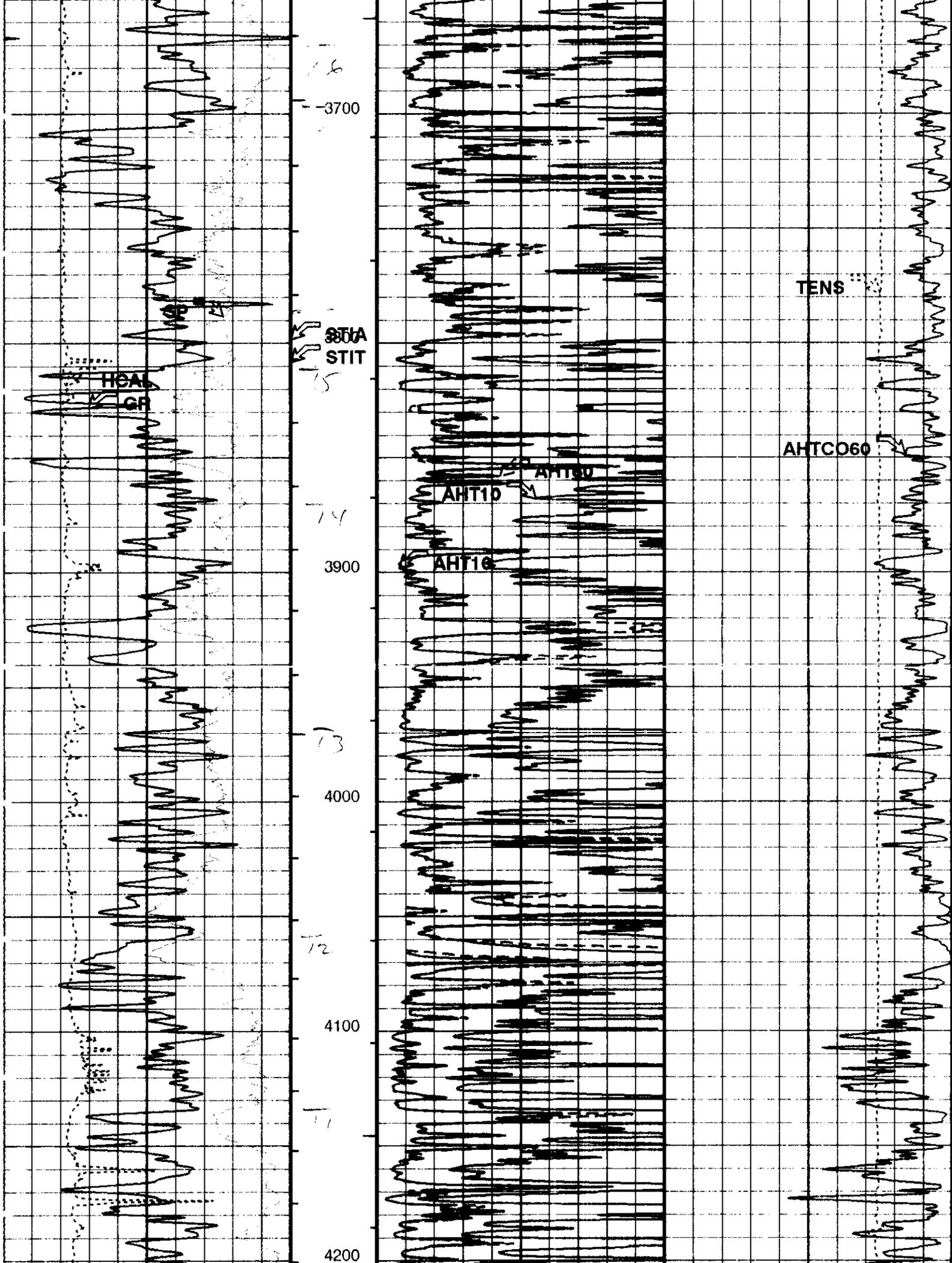
2300

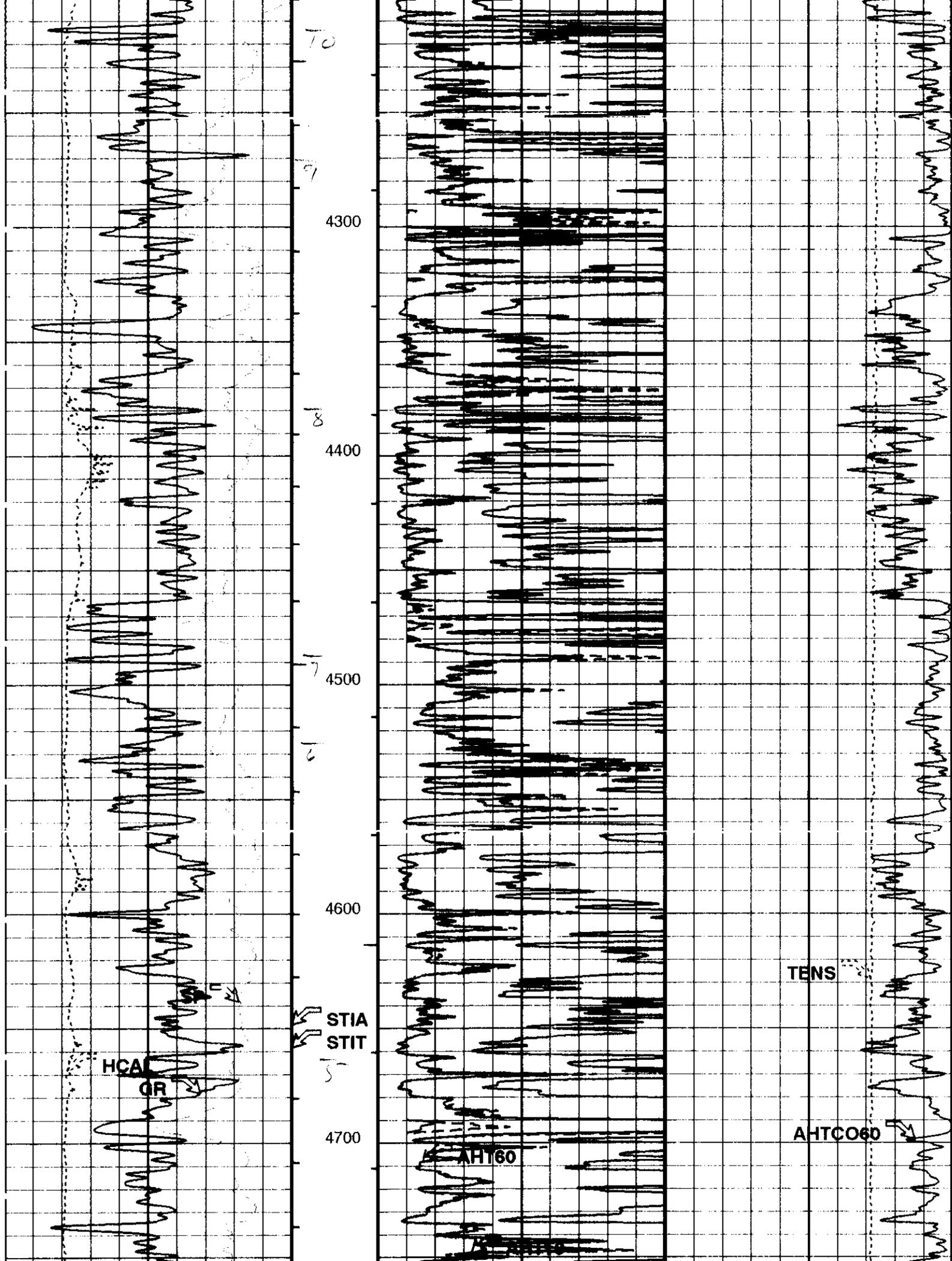
2400

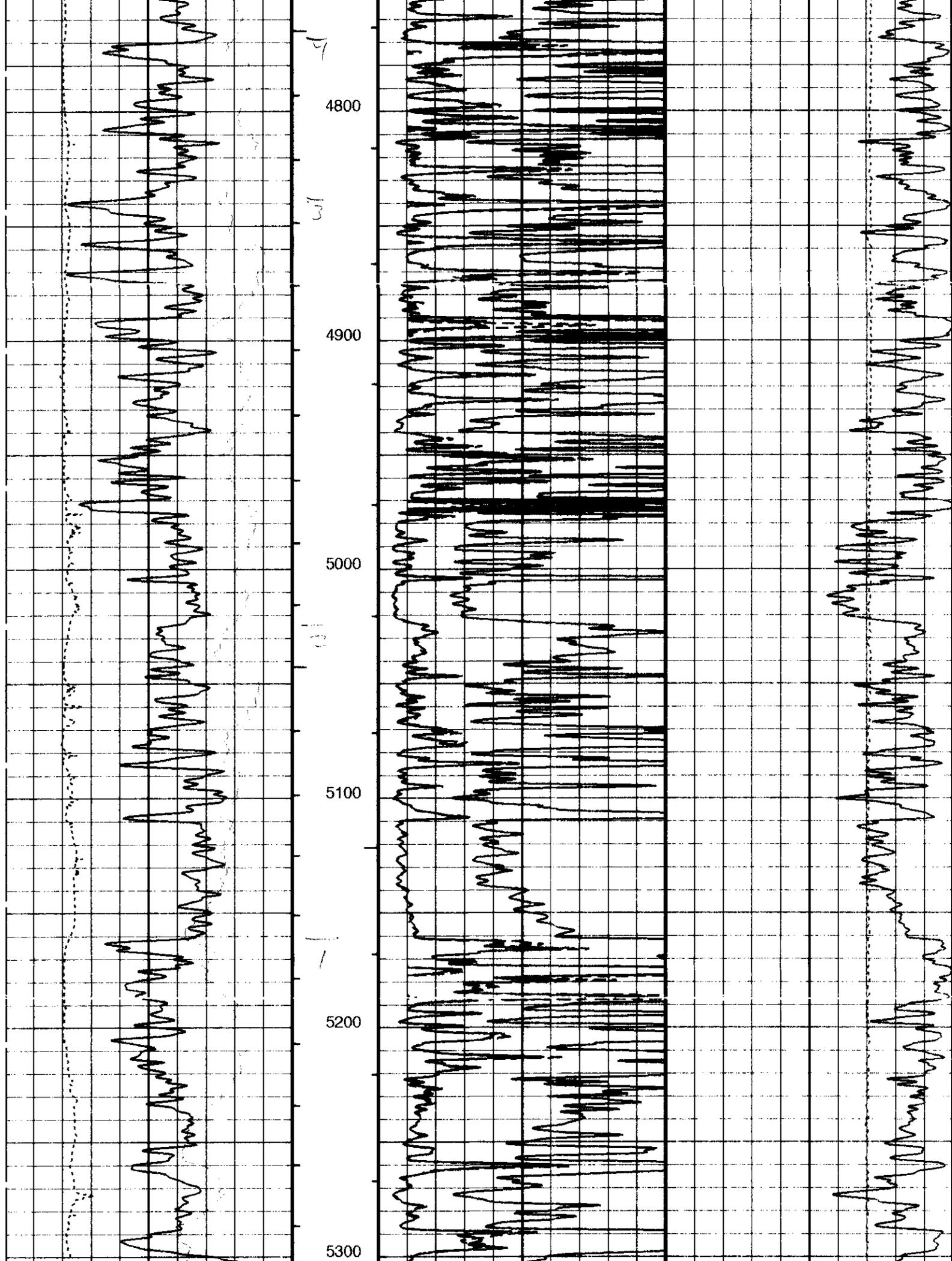
2500

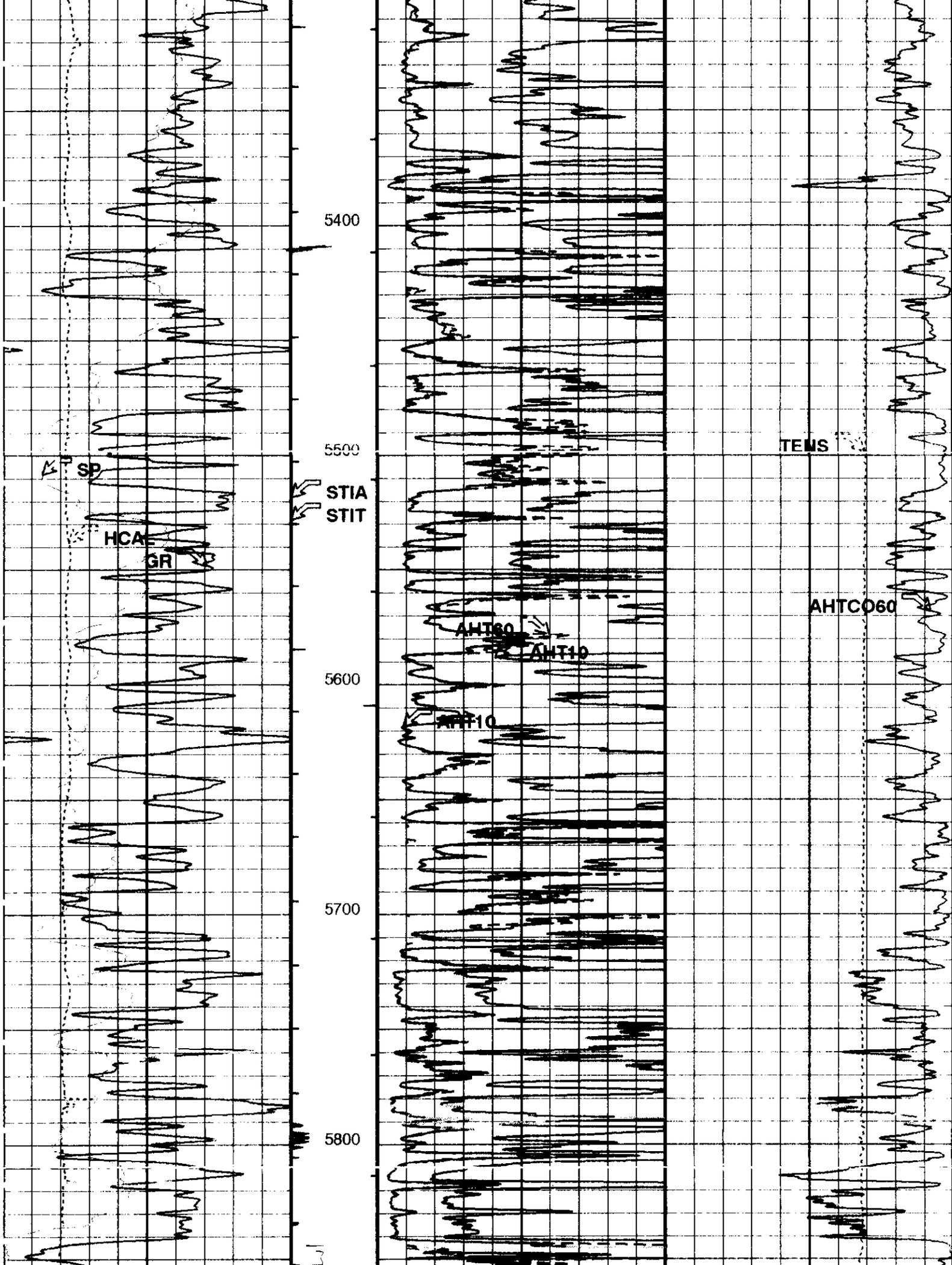


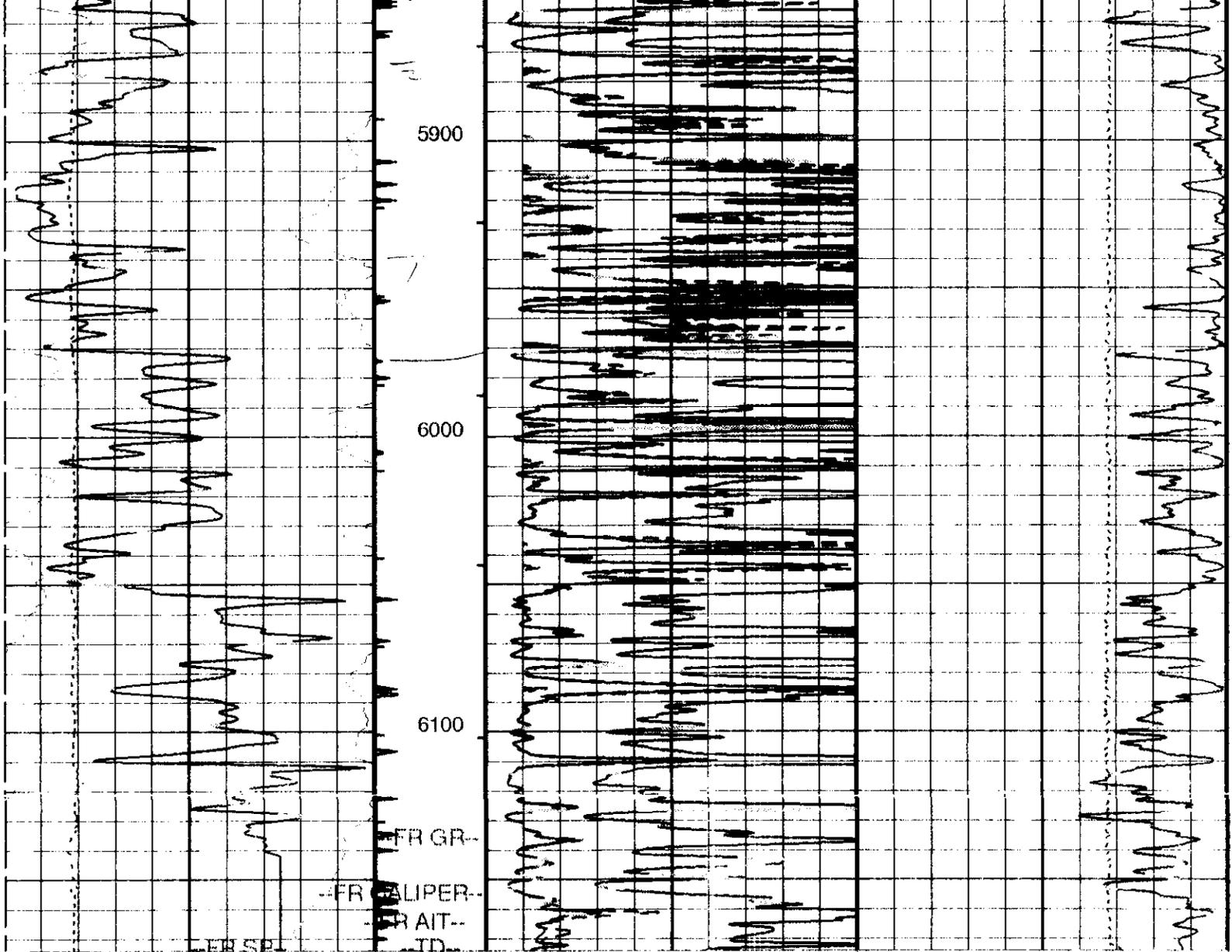












SP (SP) (MV)	20	Stuck Stretch (STIT) (F)	0	50	AIT-H 10 Inch Investigation (AHT10) (OHMM)	0	100	AIT-H 60 Inch Investigation Conductivity (AHTCO60) (MM/M)	500	0
-----------------	----	-----------------------------	---	----	---	---	-----	--	-----	---

Gamma Ray (GR) (GAPI)	200	Cable Drag From STIA to STIT	0	20	AIT-H 10 Inch Investigation (AHT10) (OHMM)	0	20	Tension (TENS) (LBF)	10000	0
--------------------------	-----	---------------------------------	---	----	---	---	----	-------------------------	-------	---

Caliper (HCAL) (IN)	6	16	Tool/Tot. Drag From D3T to STIA	0	100	AIT-H 60 Inch Investigation (AHT60) (OHMM)	0	100	MAIN PASS	
------------------------	---	----	------------------------------------	---	-----	---	---	-----	-----------	--

PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff
AHCDE	AIT-H Casing Detection Enable	Yes
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered
AHCSD	AIT-H Casing Shoe Estimated Depth	-50000 FT

AHMR	AIT-H Casing Once Limited Depth	1	
AHSTA	AIT-H Mud Resistivity Factor	1.125	IN
BHT	Bottom Hole Temperature (used in calculations)	150	DEGF
BS	Bit Size	7.875	IN
DFD	Drilling Fluid Density	6.30	LB/G
DORL	Depth Offset Repeat Analysis	0.0	FT
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	1.000000e-02	DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acceleration	YES	
MST	Mud Sample Temperature	48.00	DEGF
SHT	Surface Hole Temperature	50	DEGF
SPNV	SP Next Value	0	MV
STKT	STI Stuck Threshold	2.5	FT
TD	Total Depth	6160	FT

Format: AIT_BasicLinTwo Vertical Scale: 2" per 100' Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427			
DBM			
HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

Output DLIS Files				
DEFAULT	HILTC .008	FN:6	FIELD	15-OCT-1996 08:48

Output DLIS Files						
DEFAULT	HILTC .008	FN:6	FIELD	15-OCT-1996 08:48	6174.0 FT	42.0 FT

Integrated Hole/Cement Volume Summary

Hole Volume = 2152.00 F3
Cement Volume = 1203.43 F3 (assuming 5.50 IN casing O.D.)
Computed from 6160.0 FT to 411.0 FT using data channel(s) HCAL

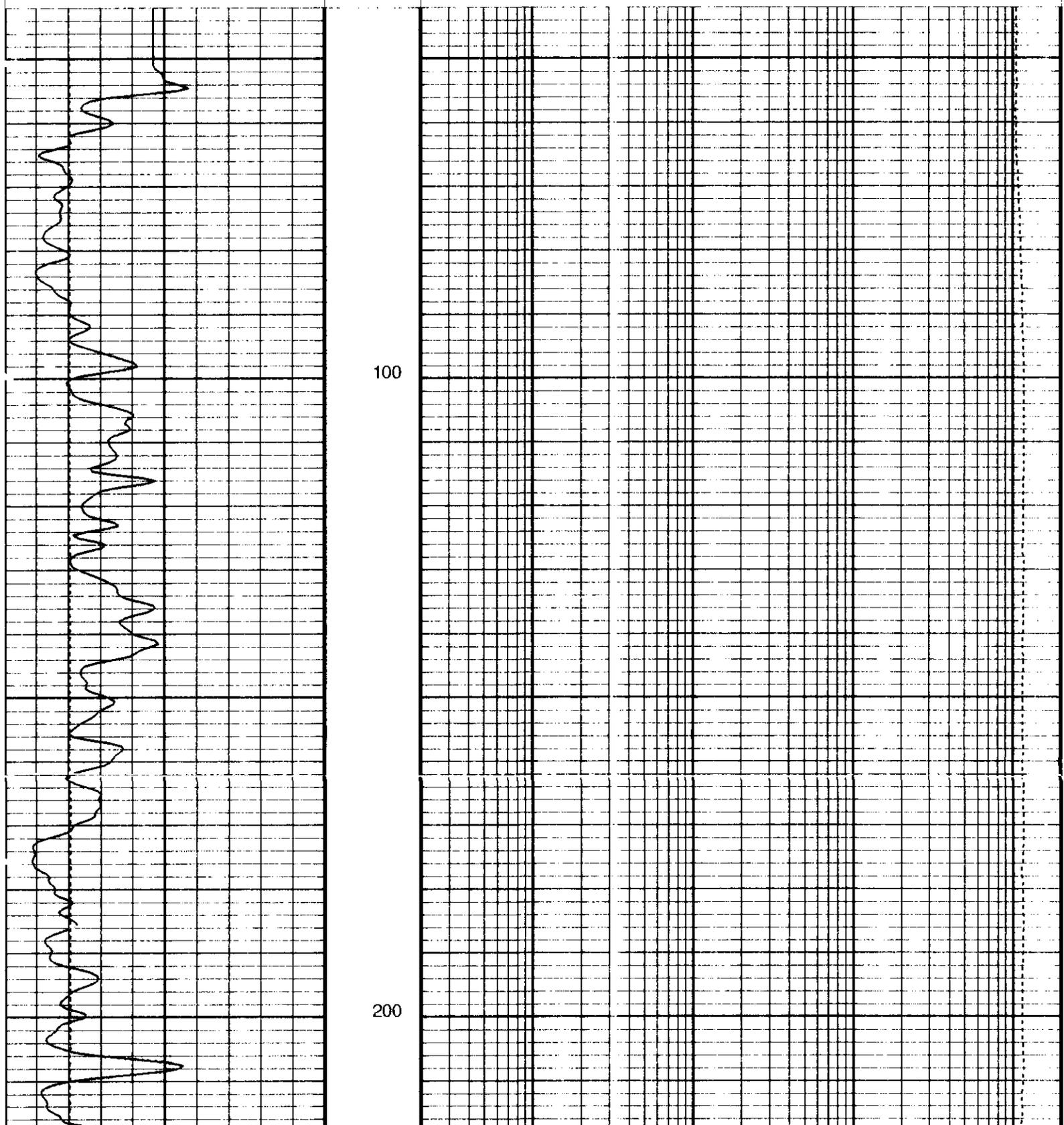
OP System Version: 7C0-427			
DBM			
HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

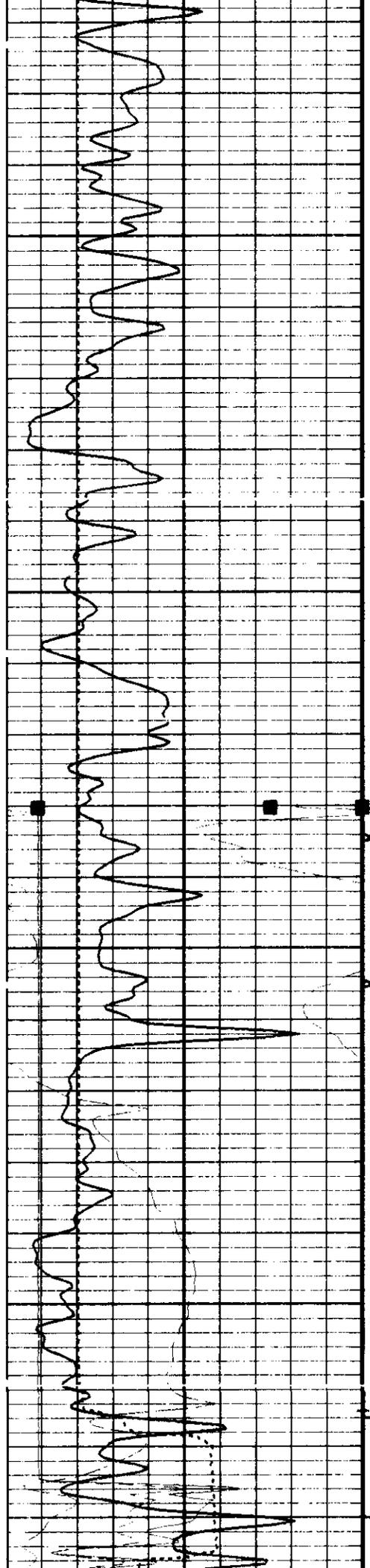
Changed Parameter Summary			
DLIS Name	New Value	Previous Value	Depth & Time
BS	7.875 IN	7.875 IN	4576.2 09:26:27

- PIP SUMMARY**
- └ Integrated Hole Volume Minor Pip Every 10 F3
 - └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3
- Time Mark Every 60 S

MAIN PASS		Tension (TENS)	
		10000	(LBF) 0
Caliper (HCAL)	AIT-H 90 Inch Investigation (AHT90)		
6 (IN) 16	0.2 (OHMM) 2000		
Gamma Ray (GR)	AIT-H 60 Inch Investigation (AHT60)		
0 (GAPI) 200	0.2 (OHMM) 2000		

-80	SP (SP) (MV)	20	Tool/Tot. Drag From D3T to STIA	0.2	AIT-H 30 Inch Investigation (AHT30) (OHMM)	2000
0	AIT-H Outer Invasion Diameter (AHTD2) (IN)	90	Cable Drag From STIA to STIT	0.2	AIT-H 20 Inch Investigation (AHT20) (OHMM)	2000
0	AIT-H Inner Invasion Diameter (AHTD1) (IN)	90	Stuck Stretch (STIT) 0 (F) 50	0.2	AIT-H 10 Inch Investigation (AHT10) (OHMM)	2000

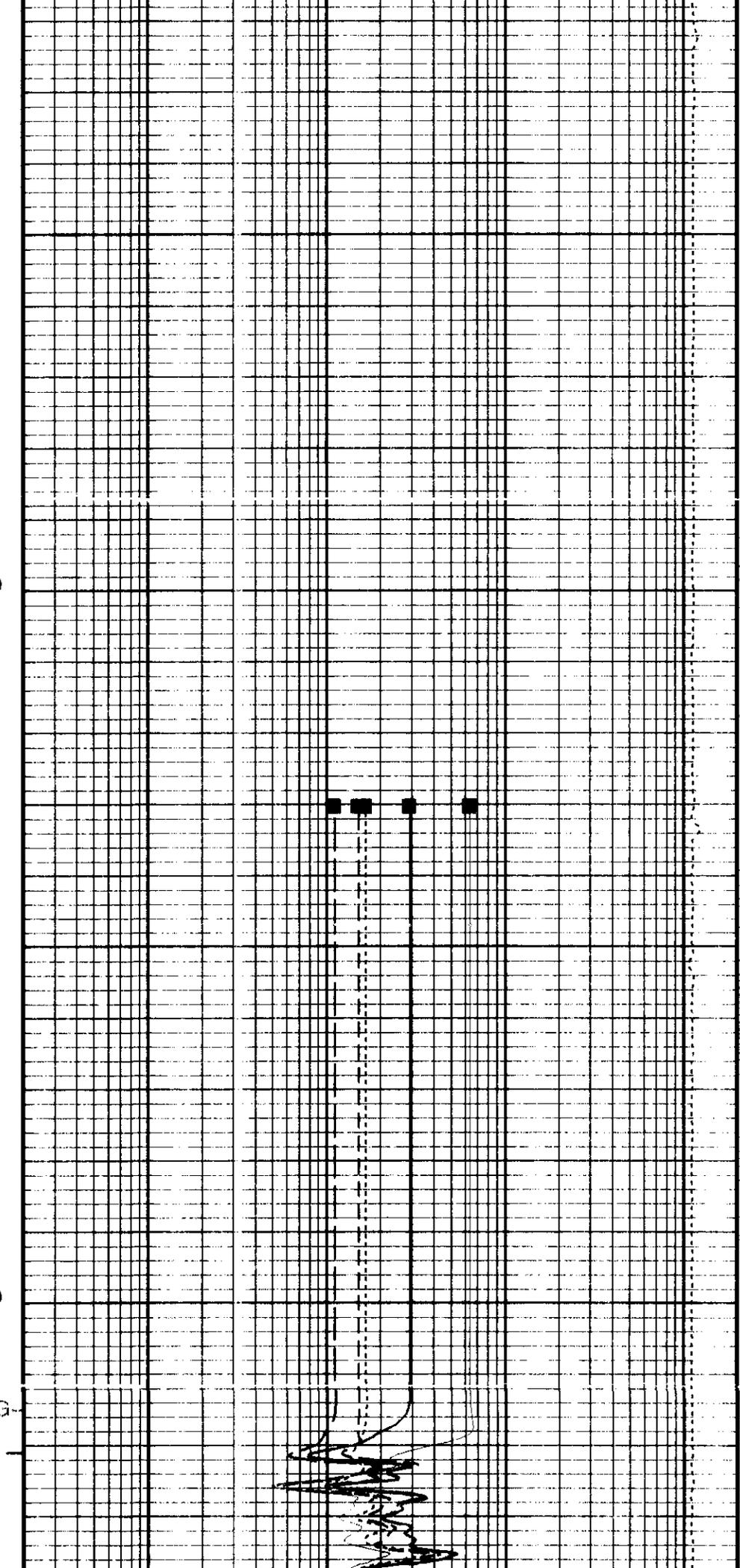


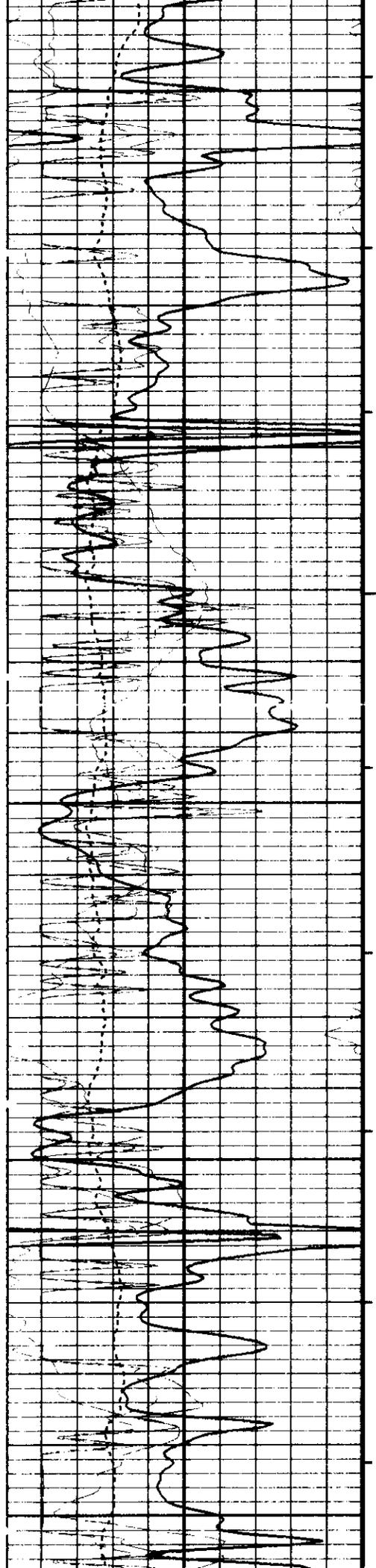


300

400

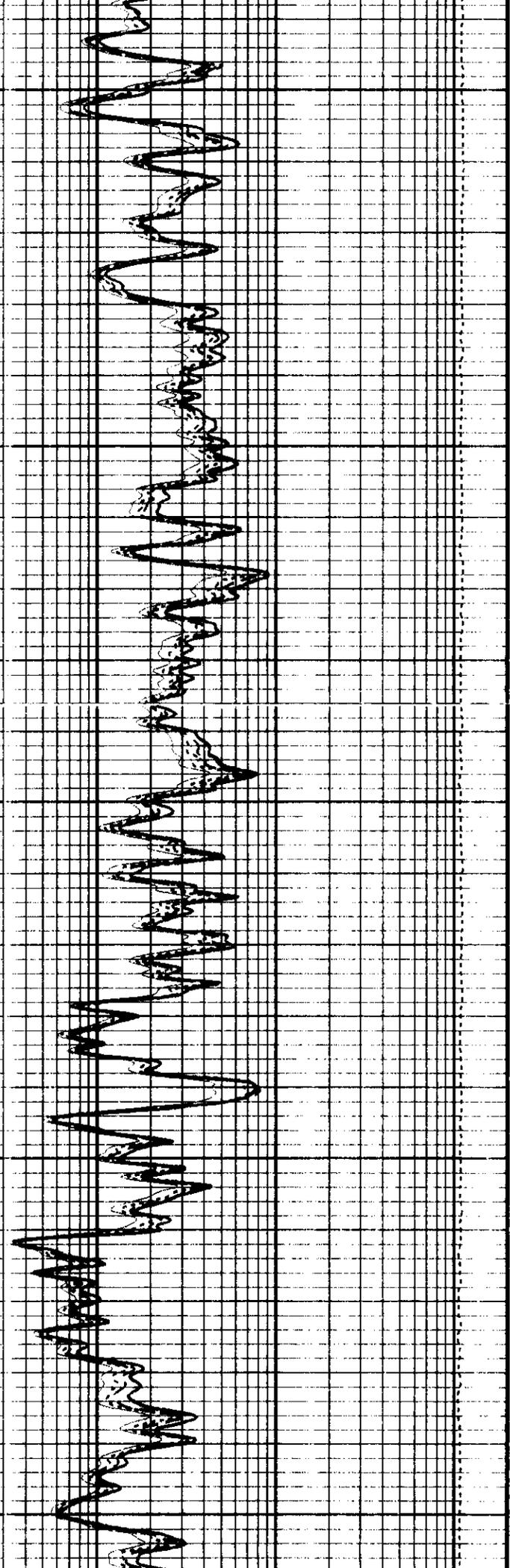
CASING

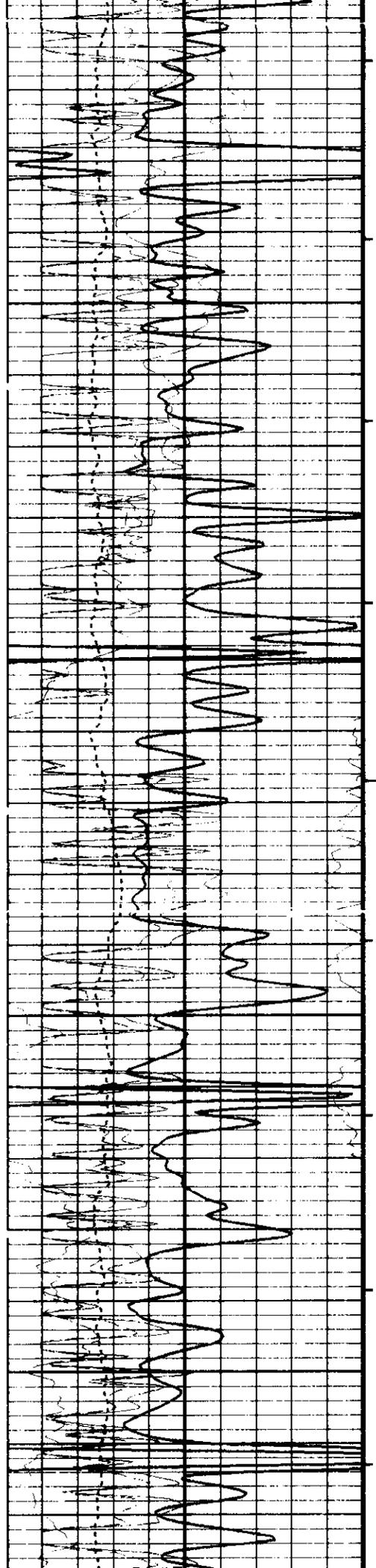




500

600

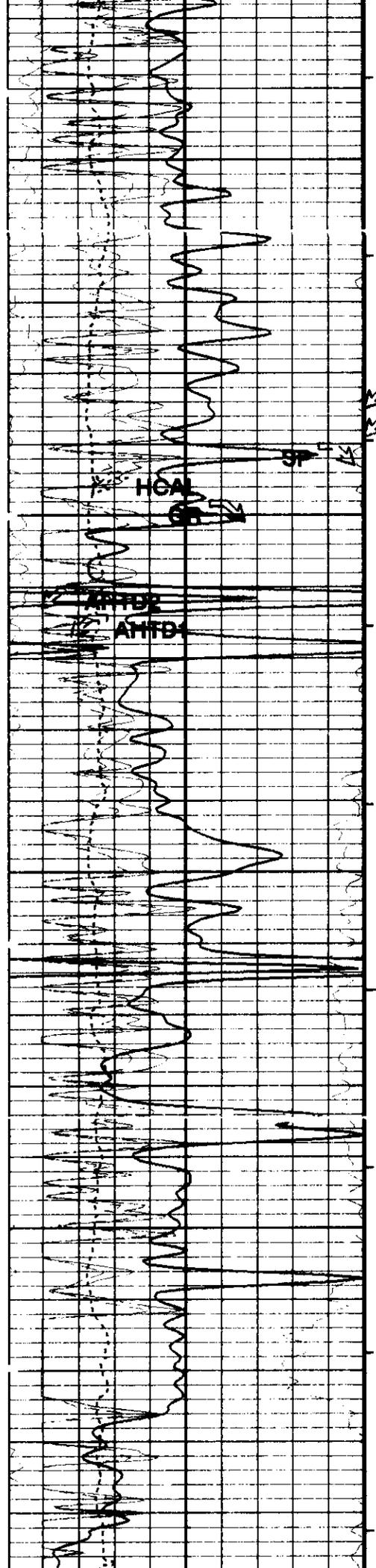




700

800





900

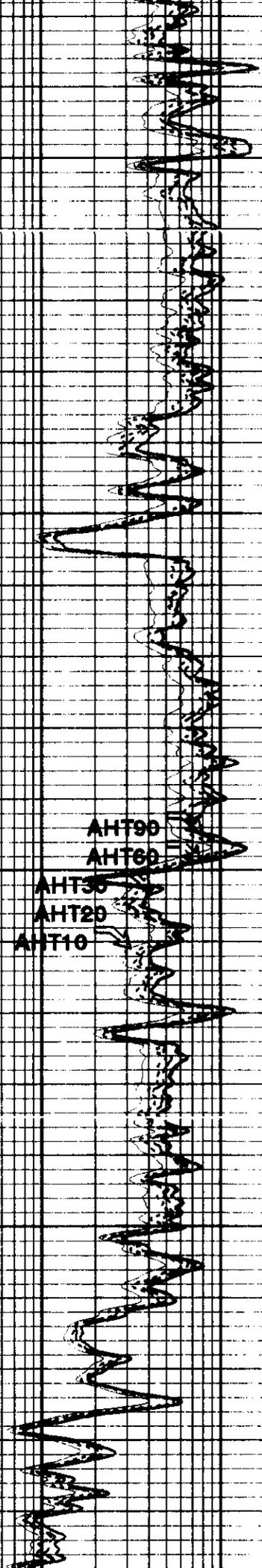
STIA
STIT

HQA

AHT100

AHT100

1000



TENS

AHT90

AHT60

AHT30

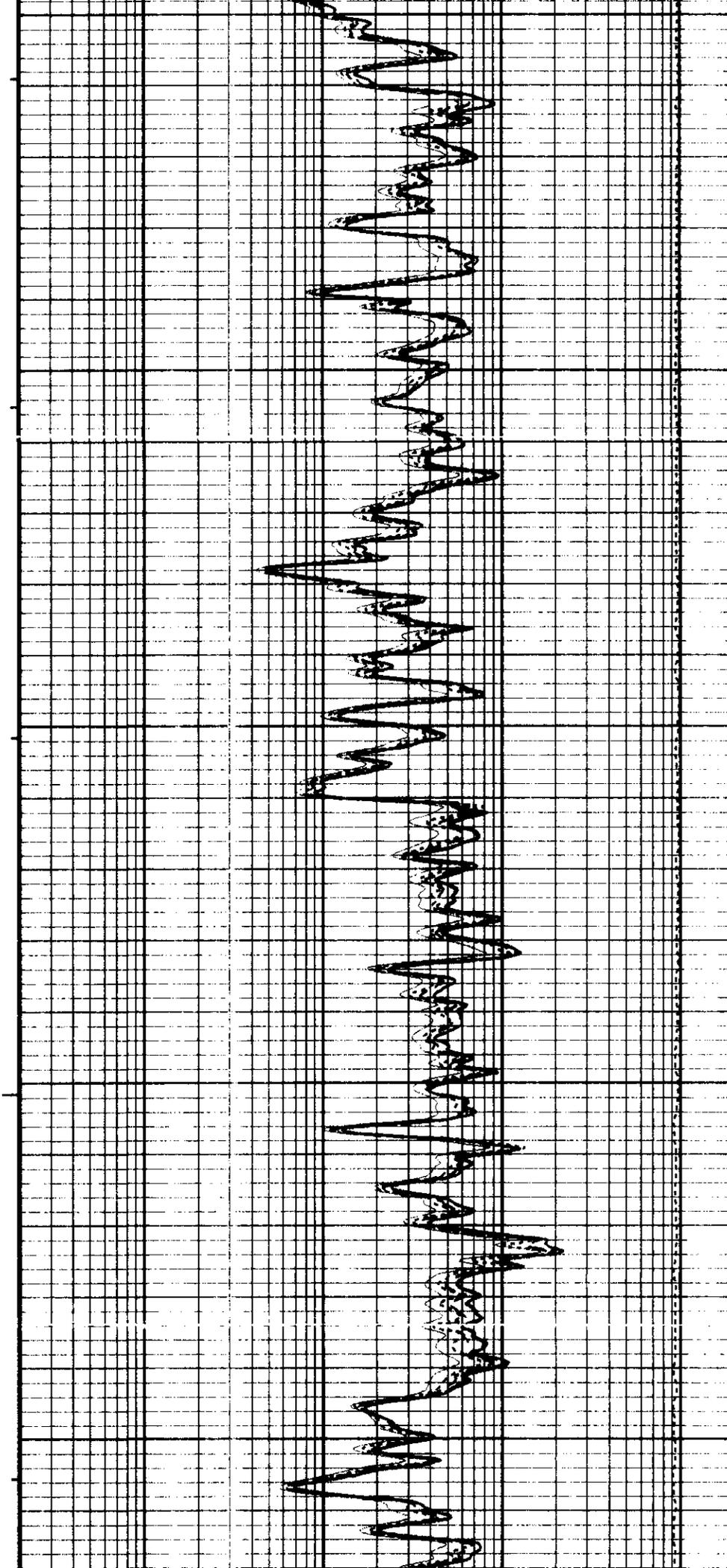
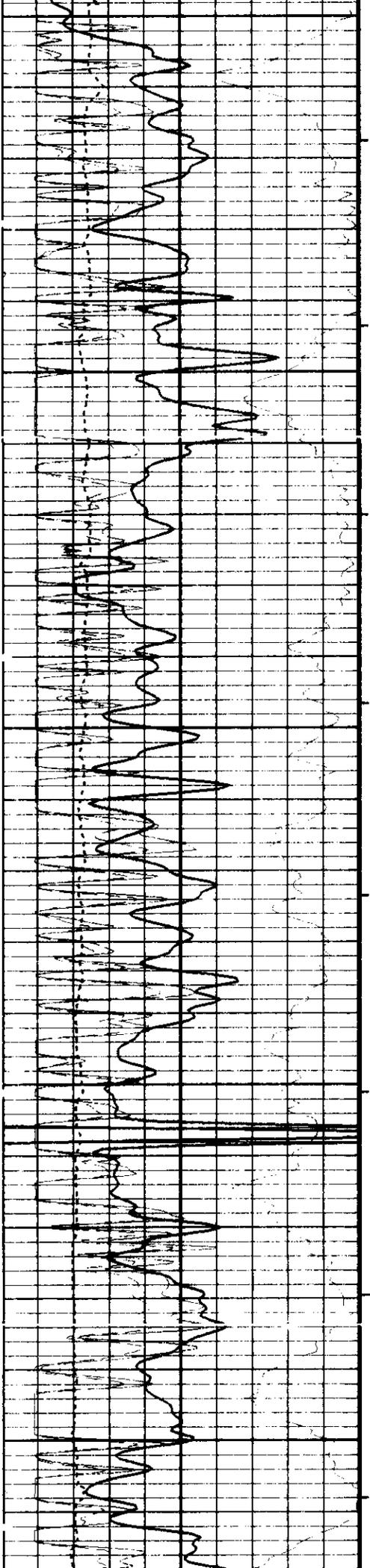
AHT20

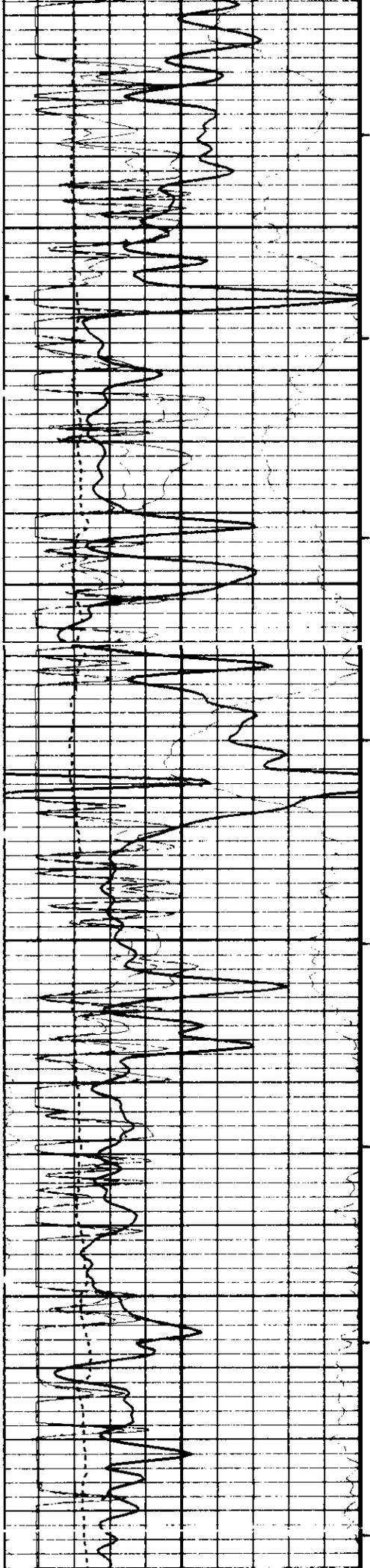
AHT10

1100

1200

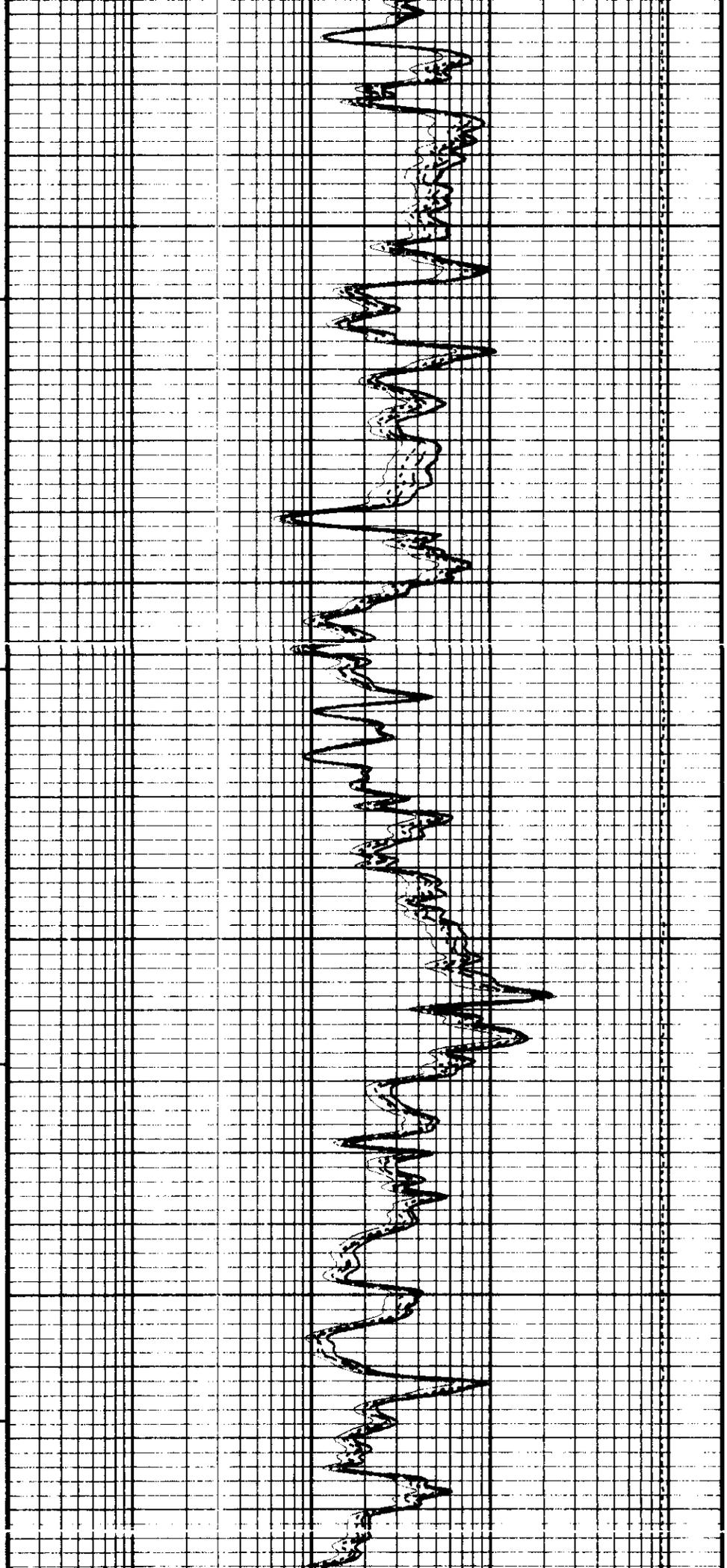
1300

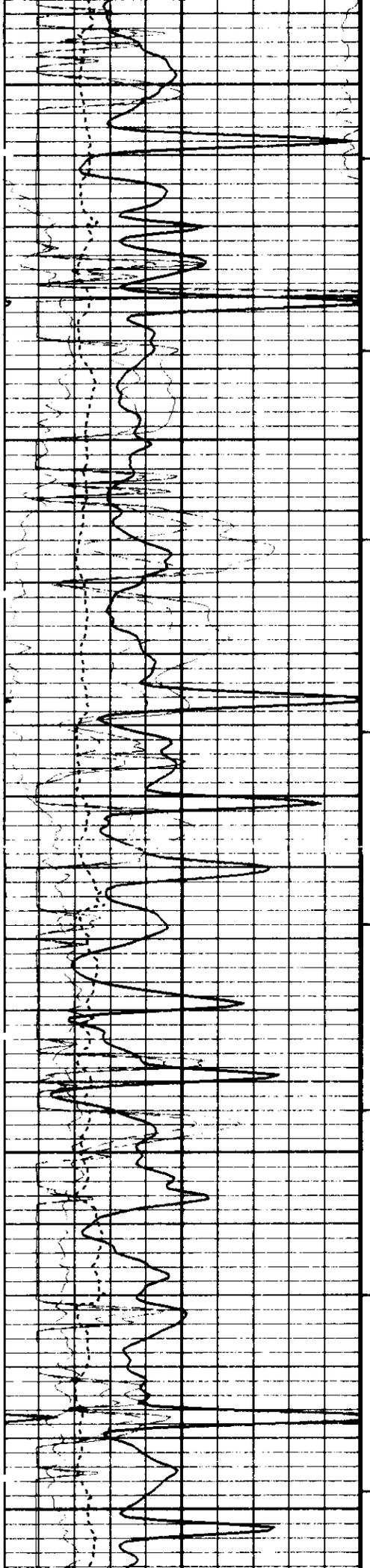




1400

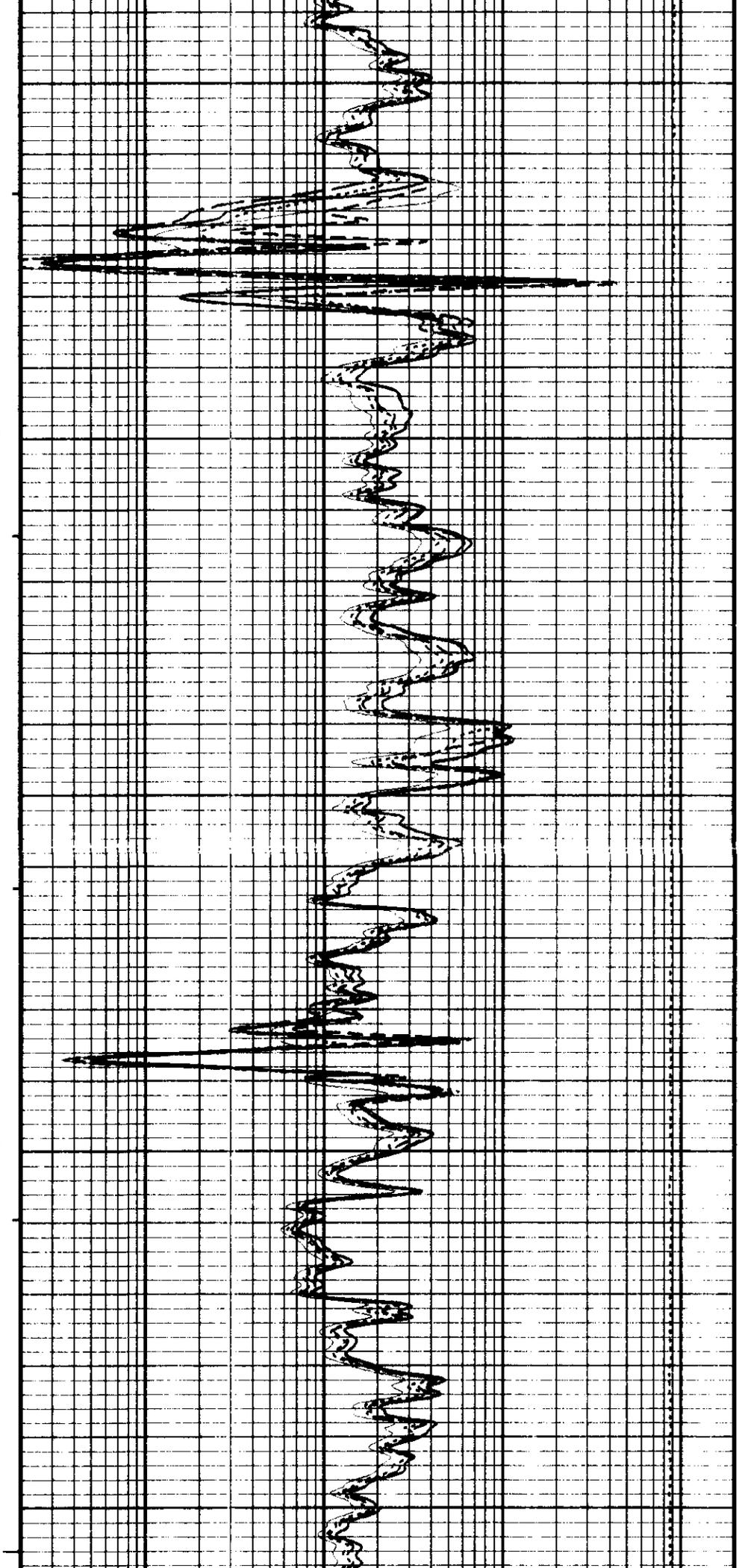
1500

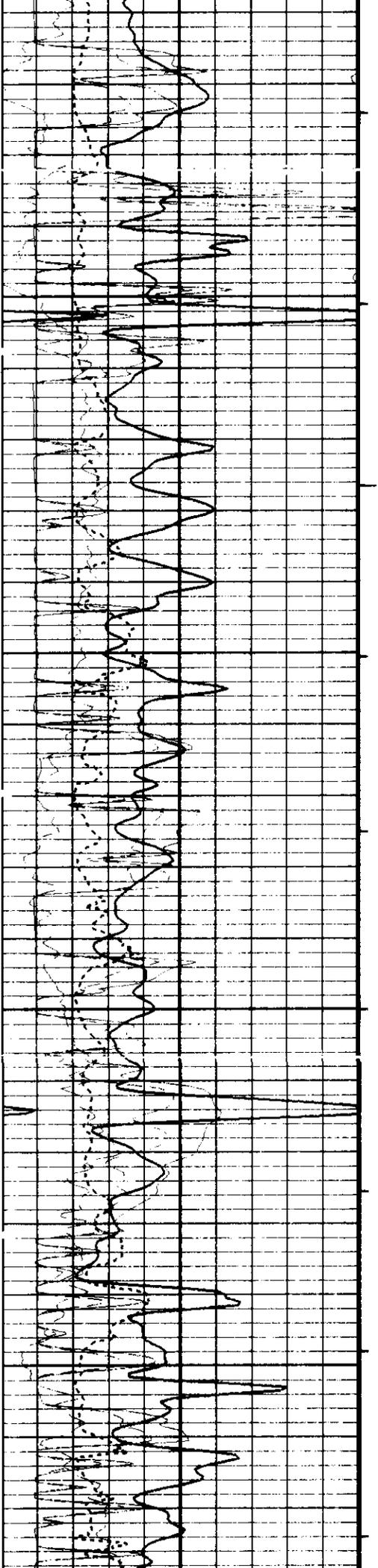




1600

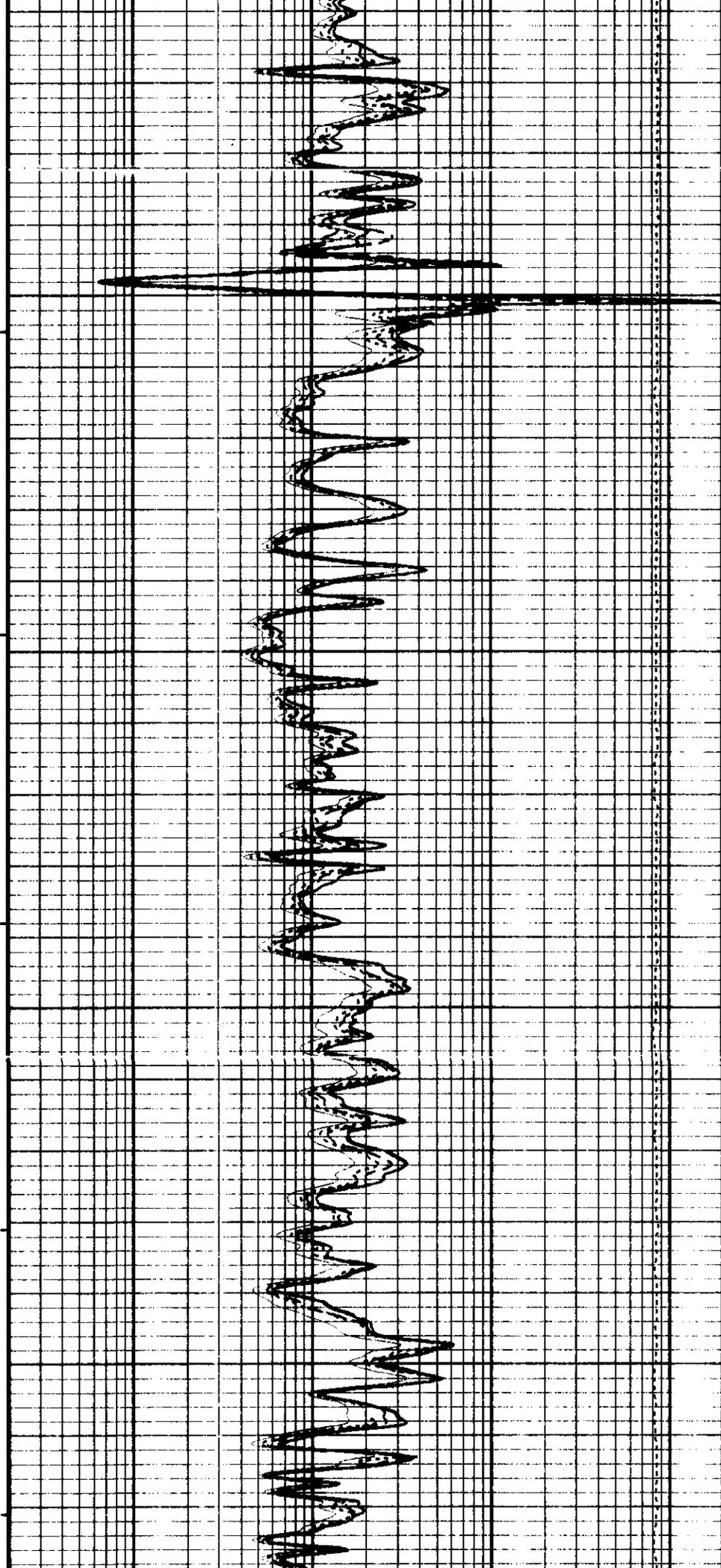
1700

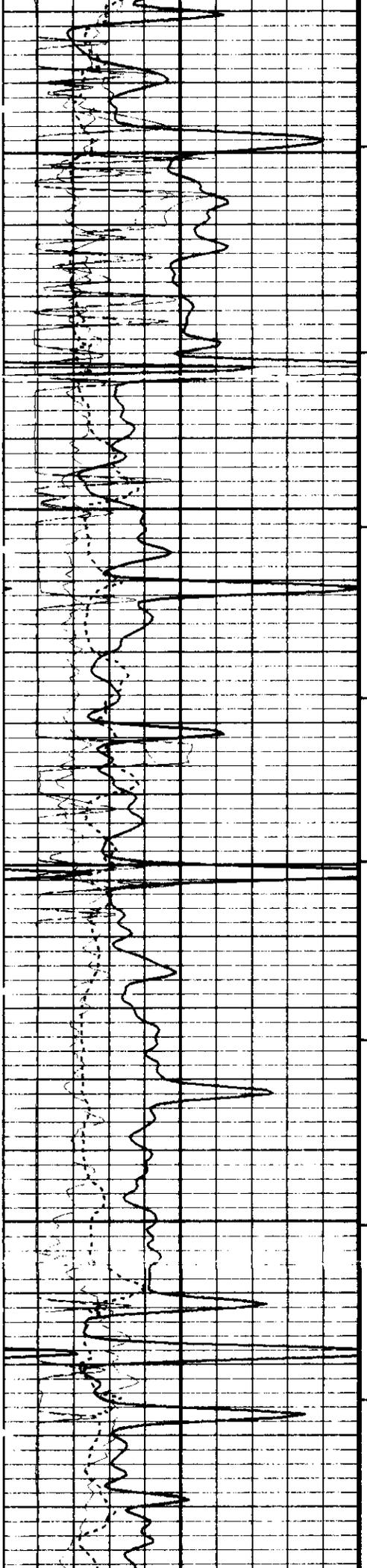




1800

1900

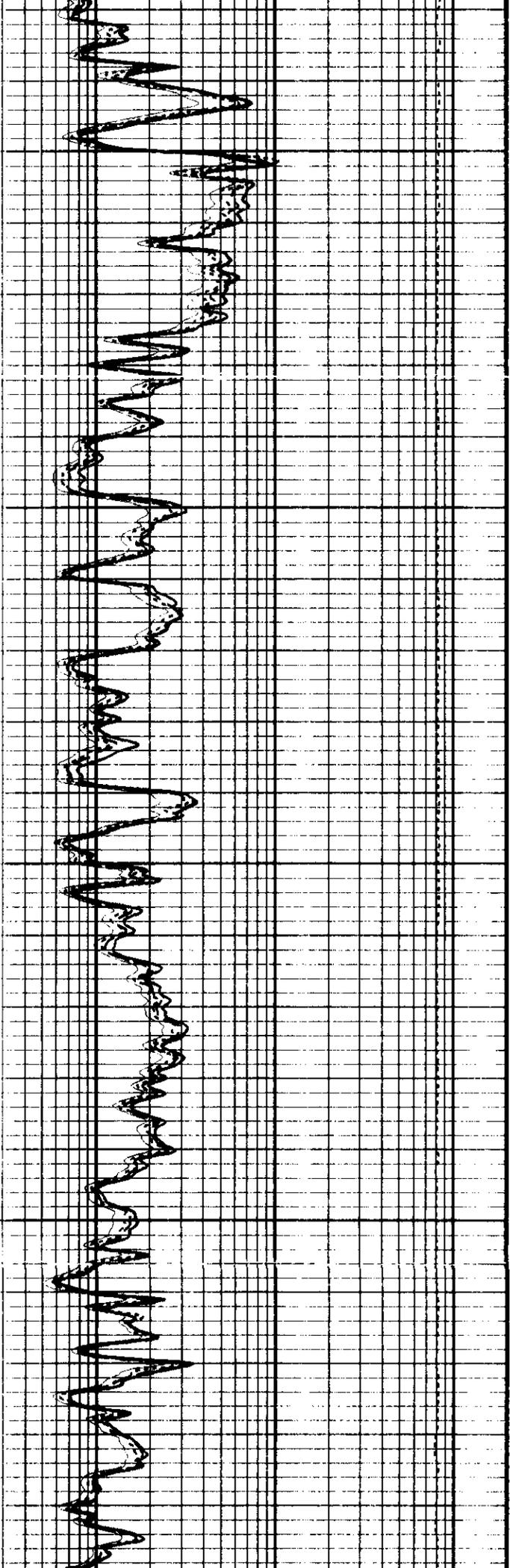




2000

2100

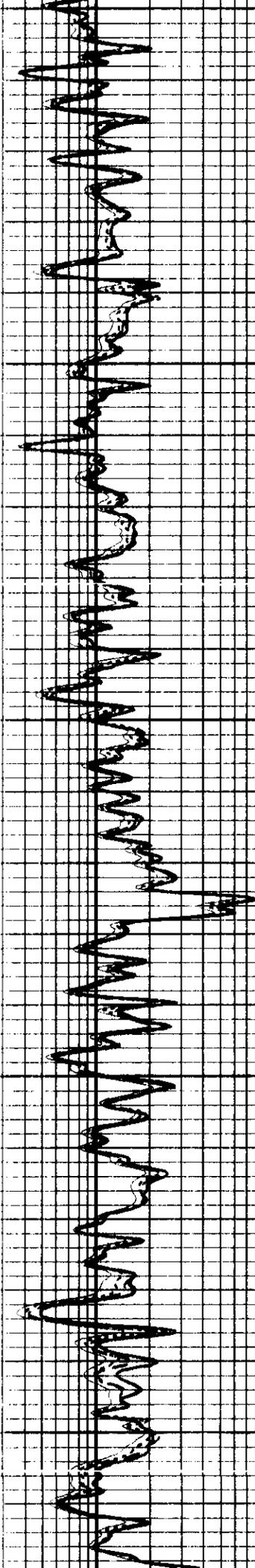
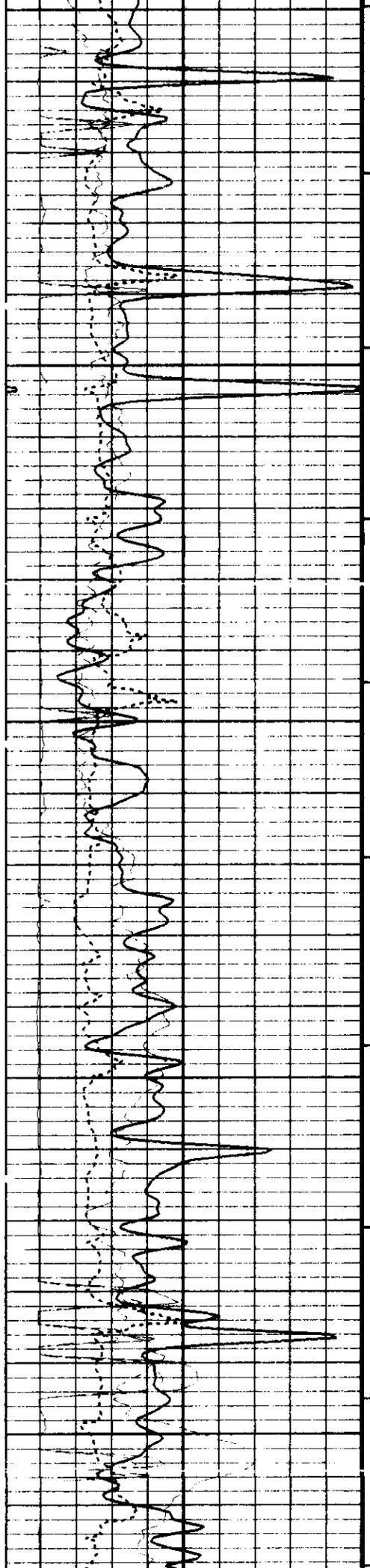
2200

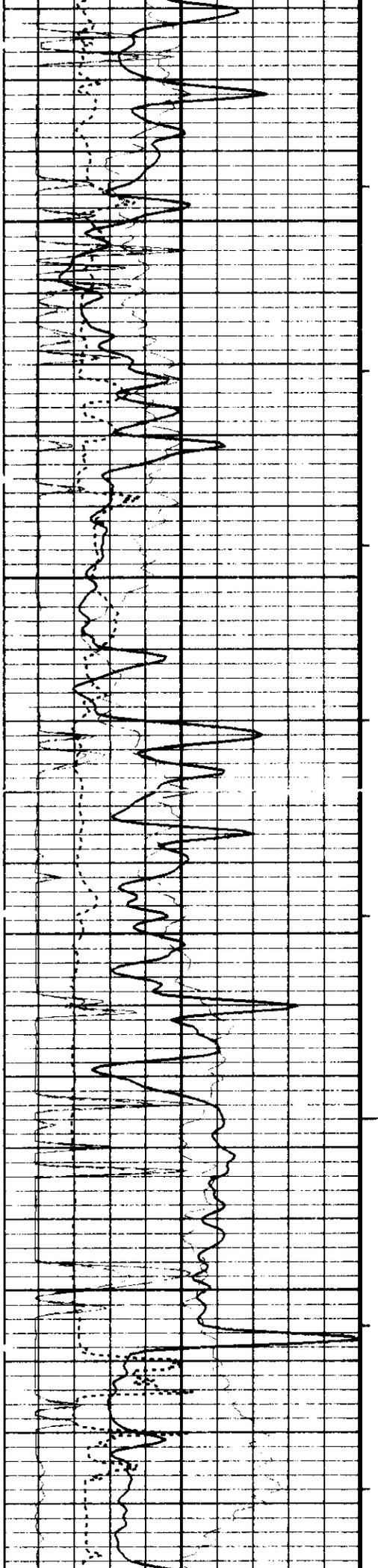


2200

2300

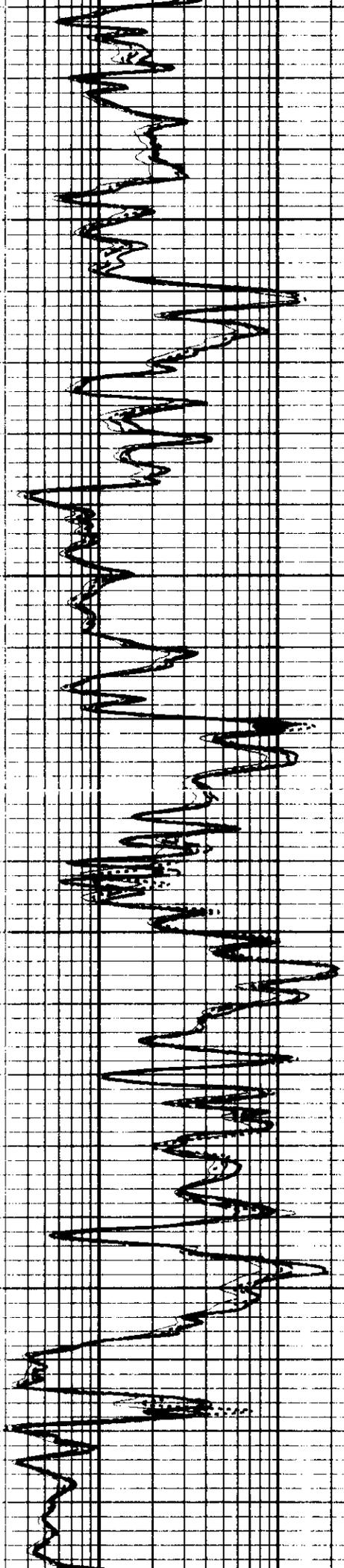
2400

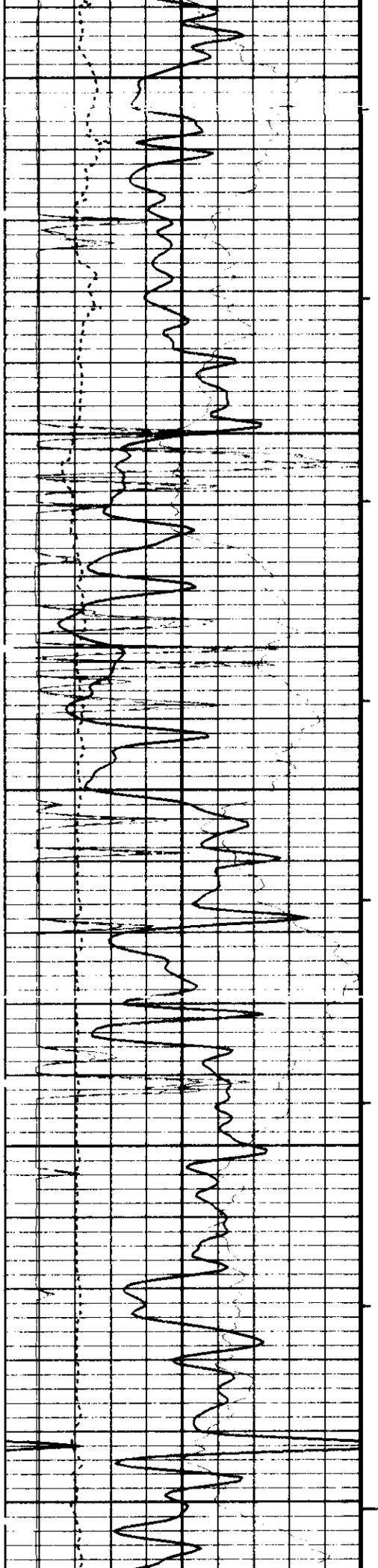




2500

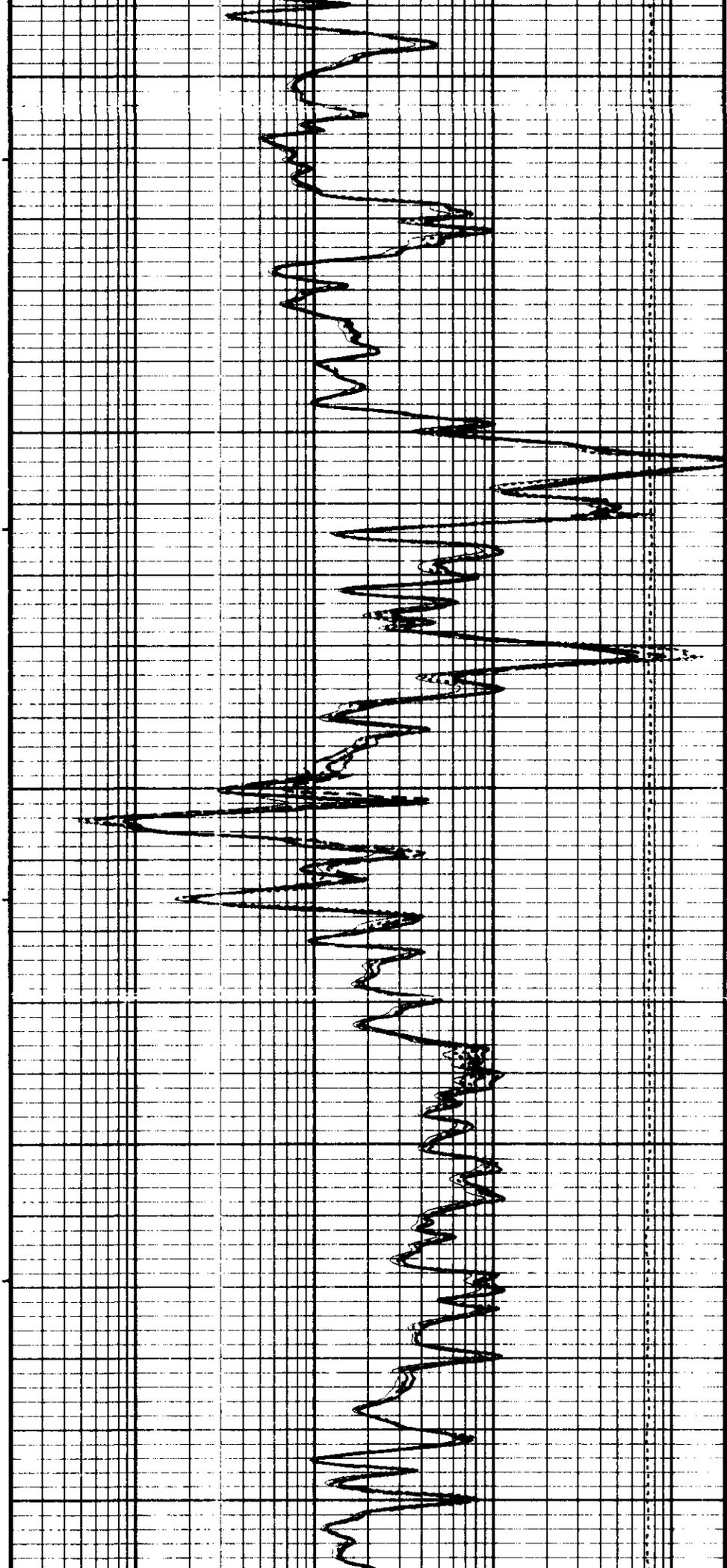
2600

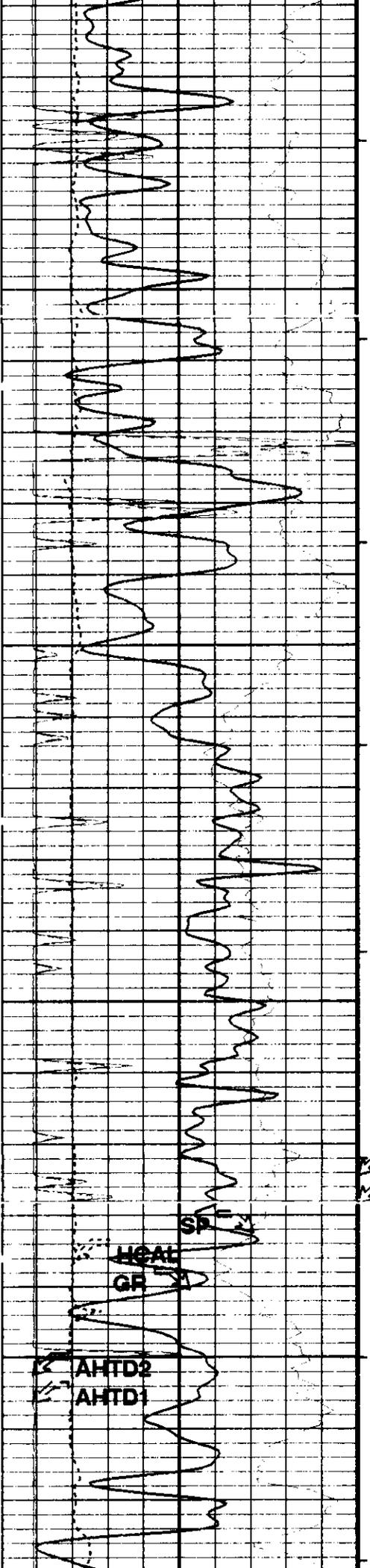




2700

2800





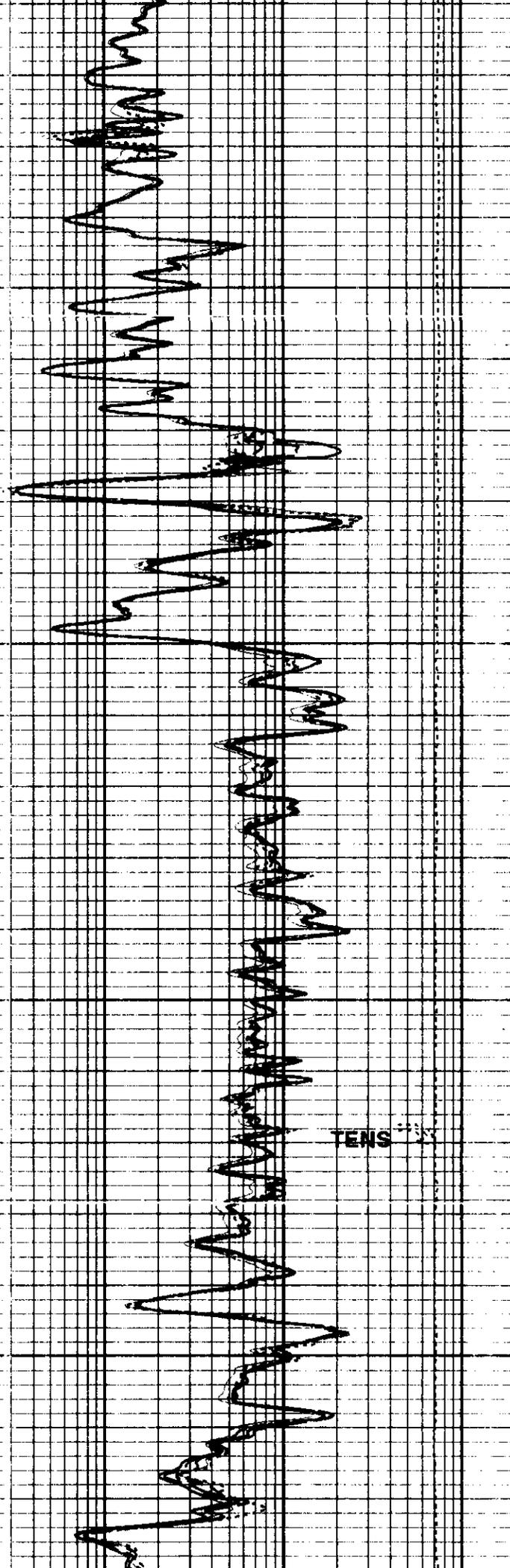
2900

3000

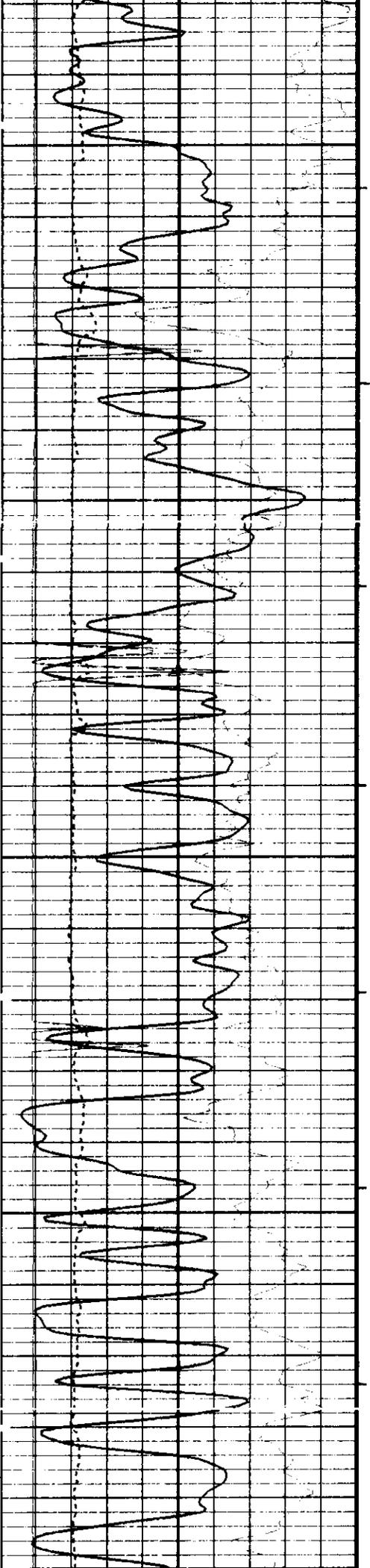
STIA
STIT

HEAT
GR

AHTD2
AHTD1



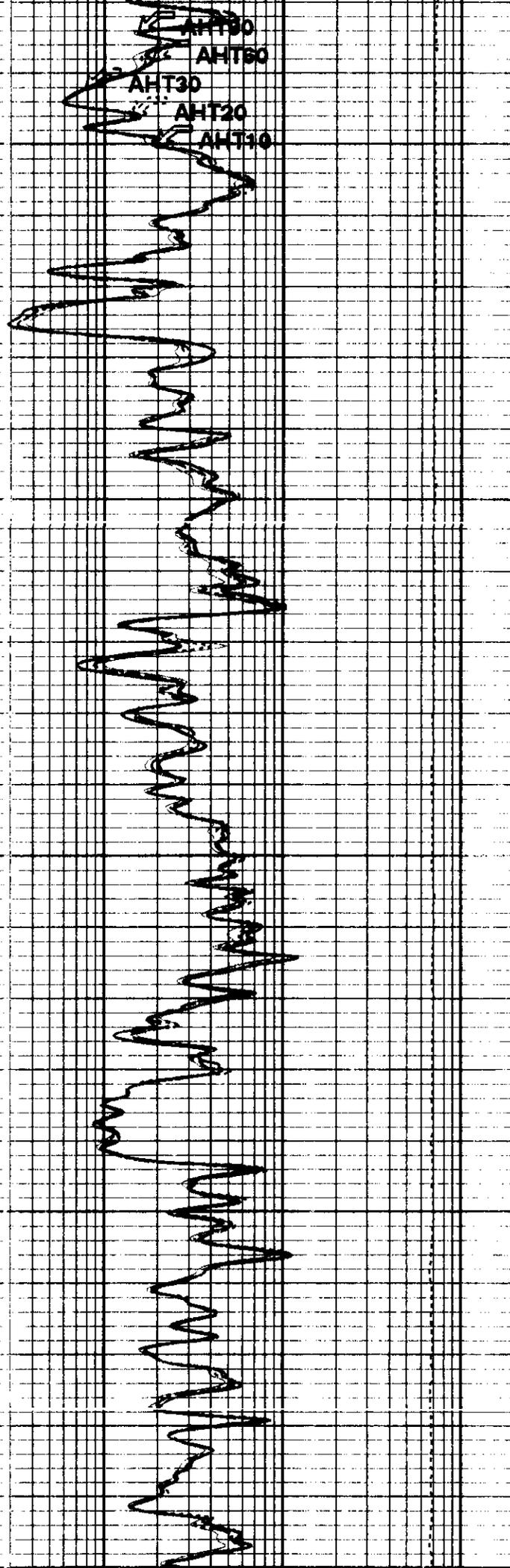
TENS



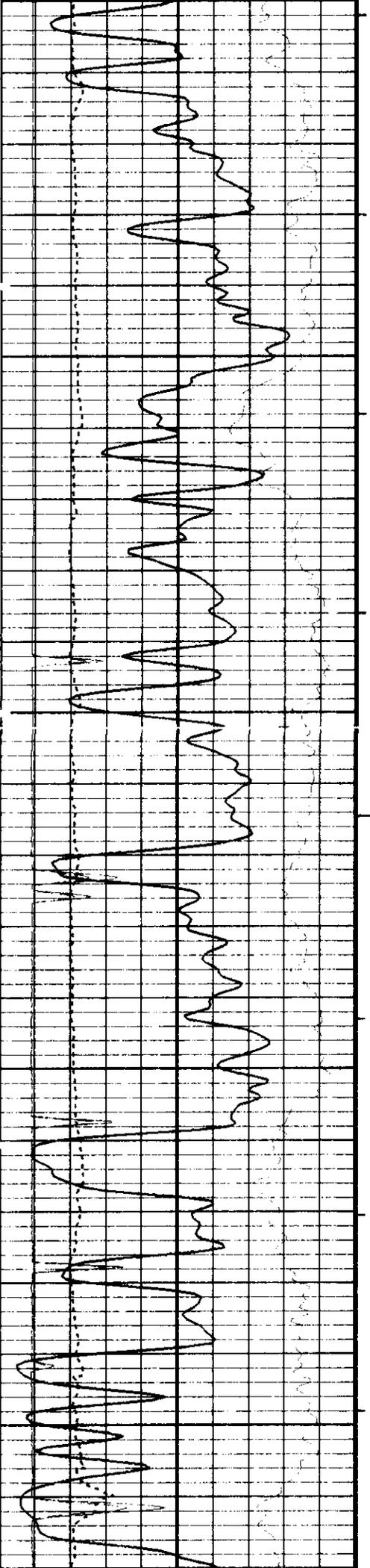
3100

3200

3300

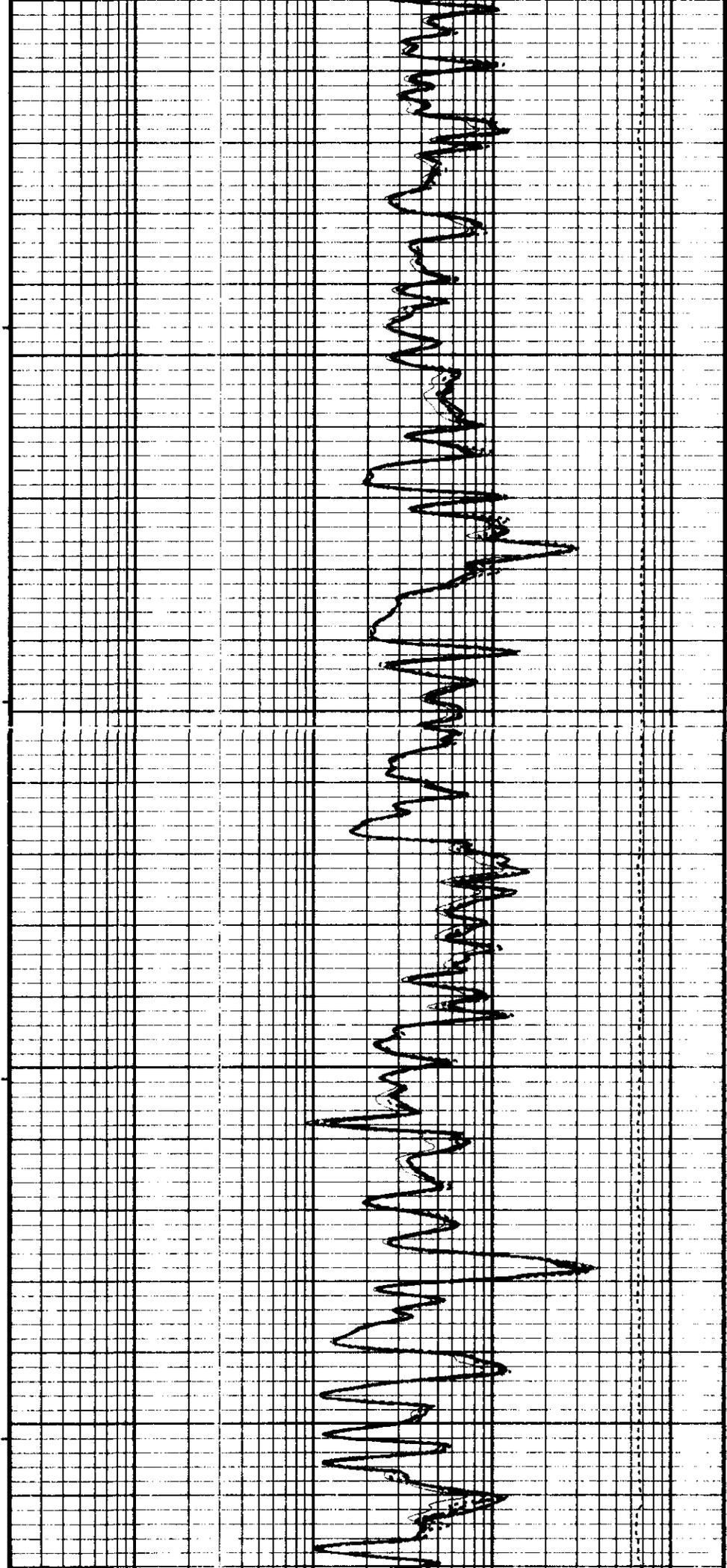


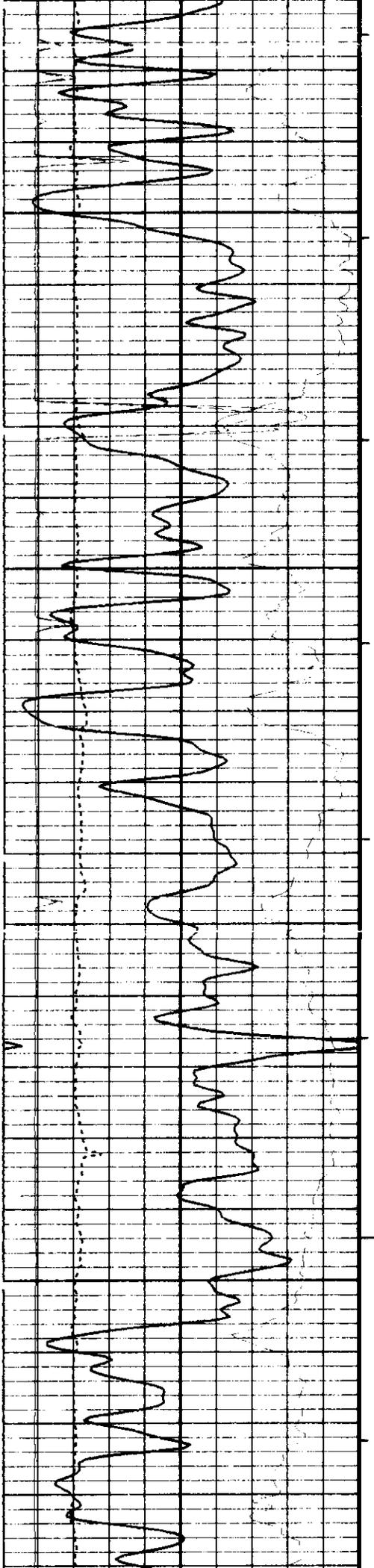
AHT30
AHT50
AHT30
AHT20
AHT10



3400

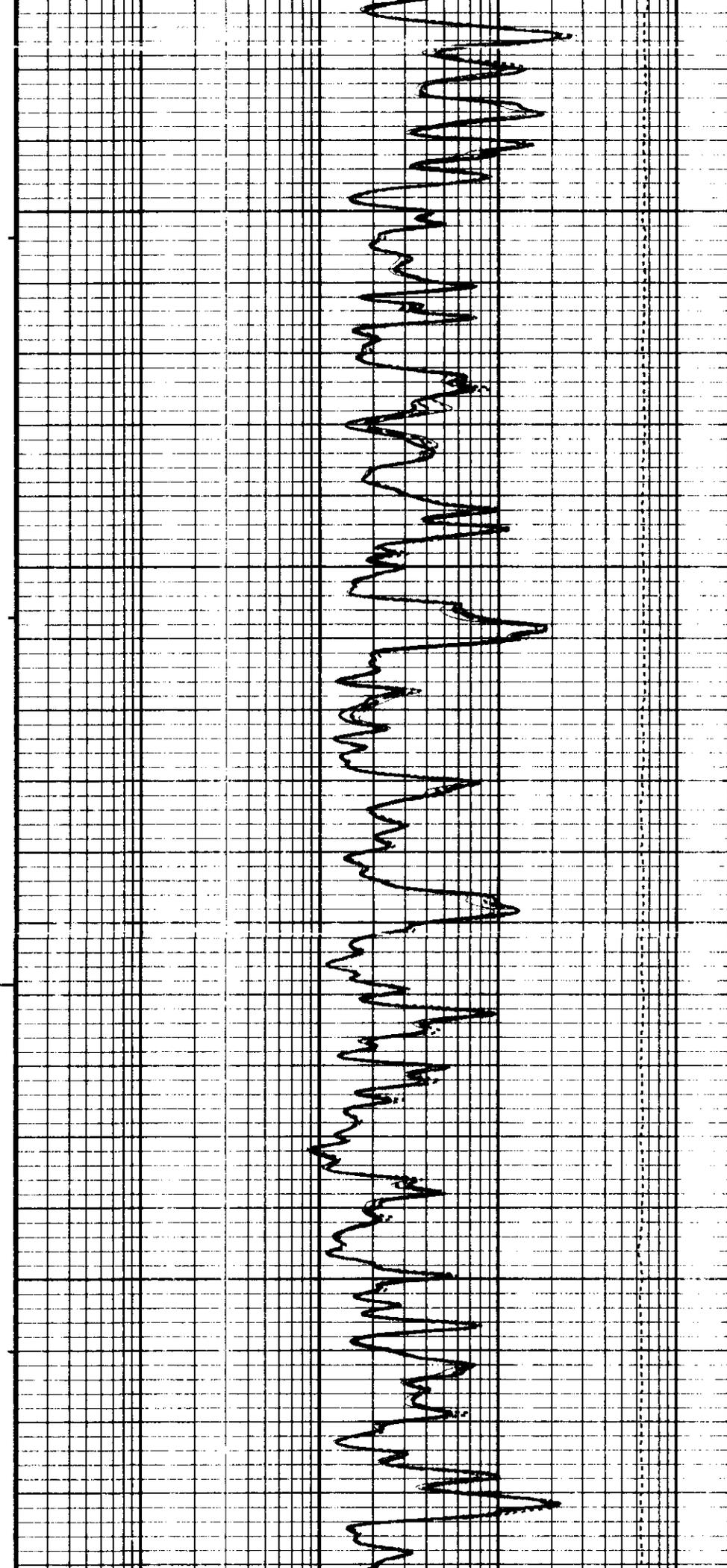
3500

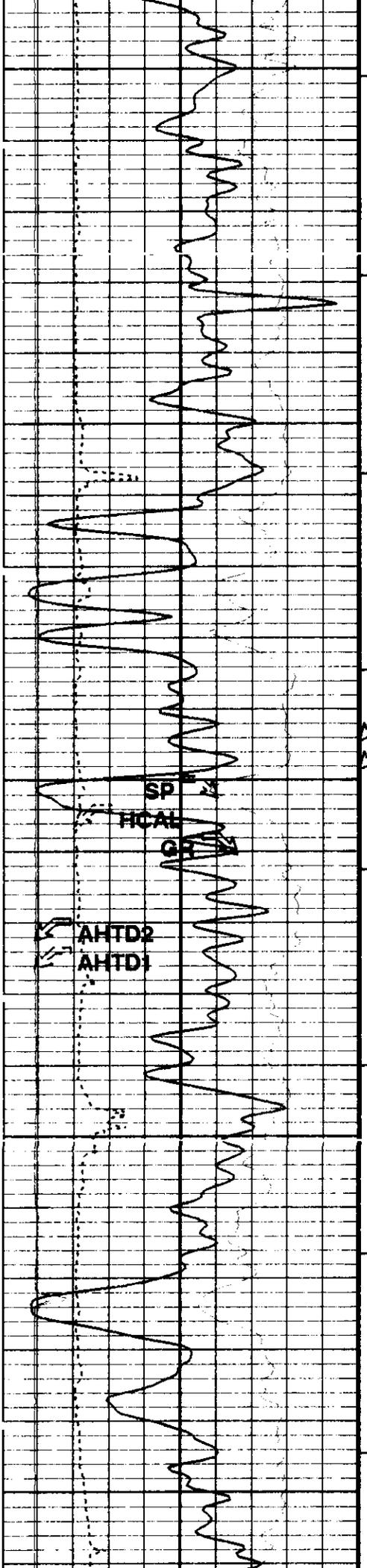




3600

3700





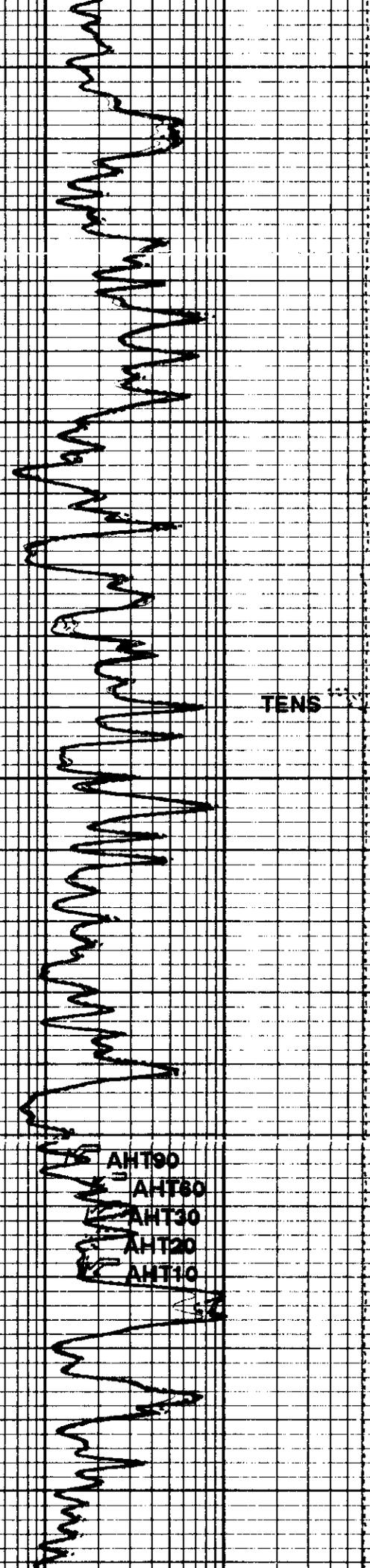
3800

STIA
STIT

SP
HCAI

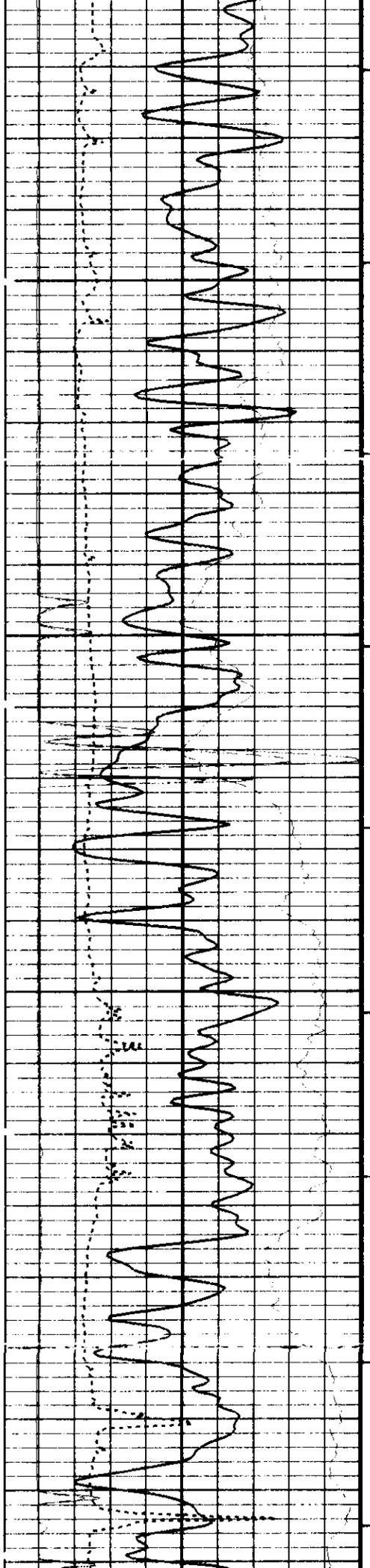
AHTD2
AHTD1

3900



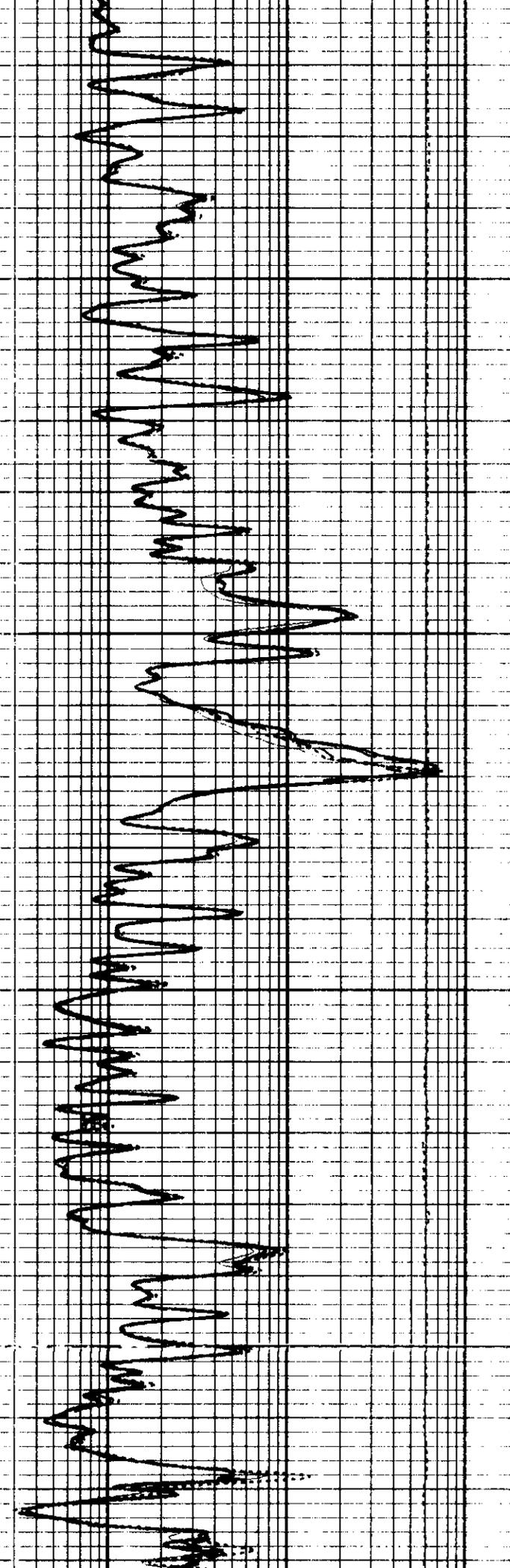
TENS

AHT90
AHT80
AHT30
AHT20
AHT10



4000

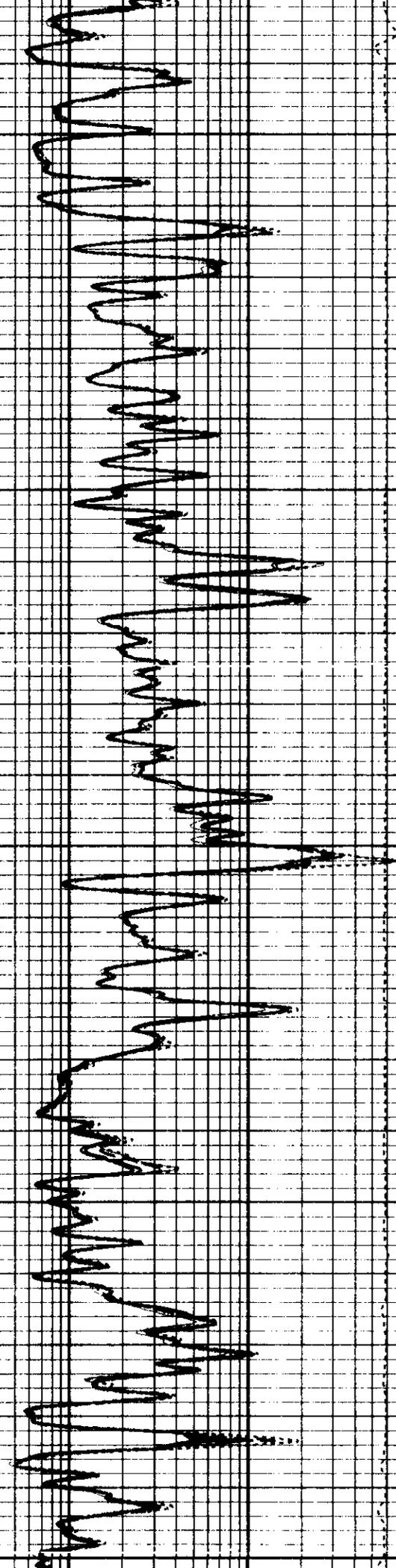
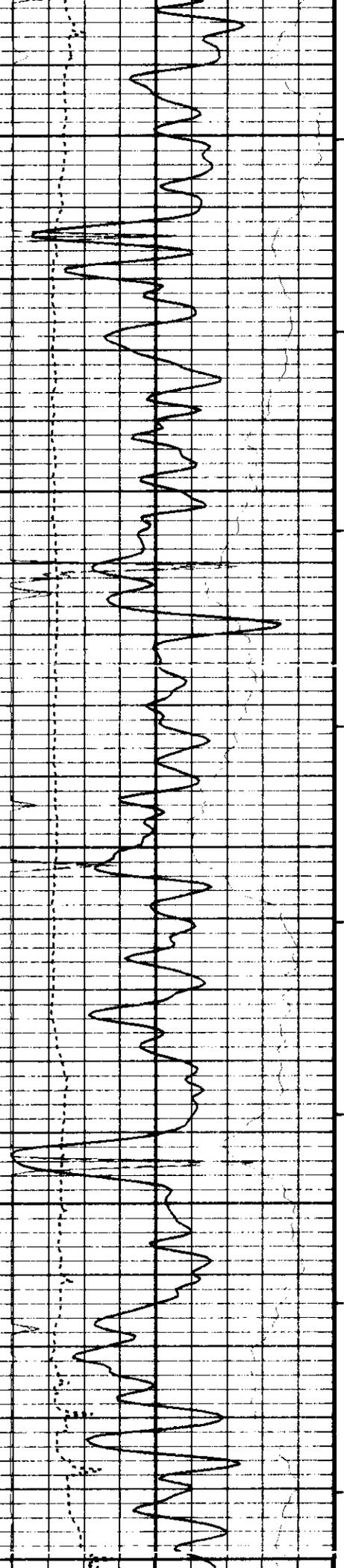
4100

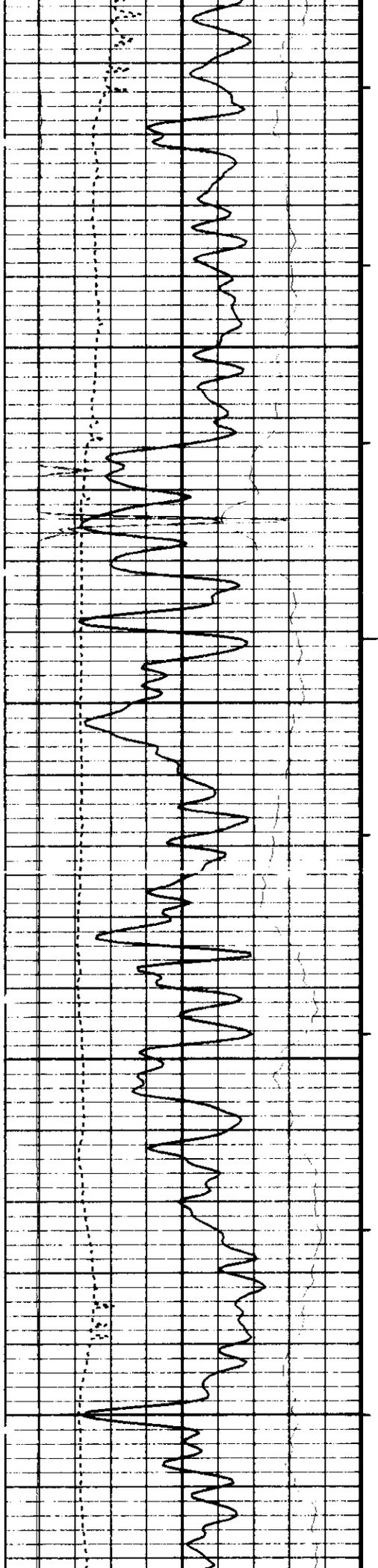


4200

4300

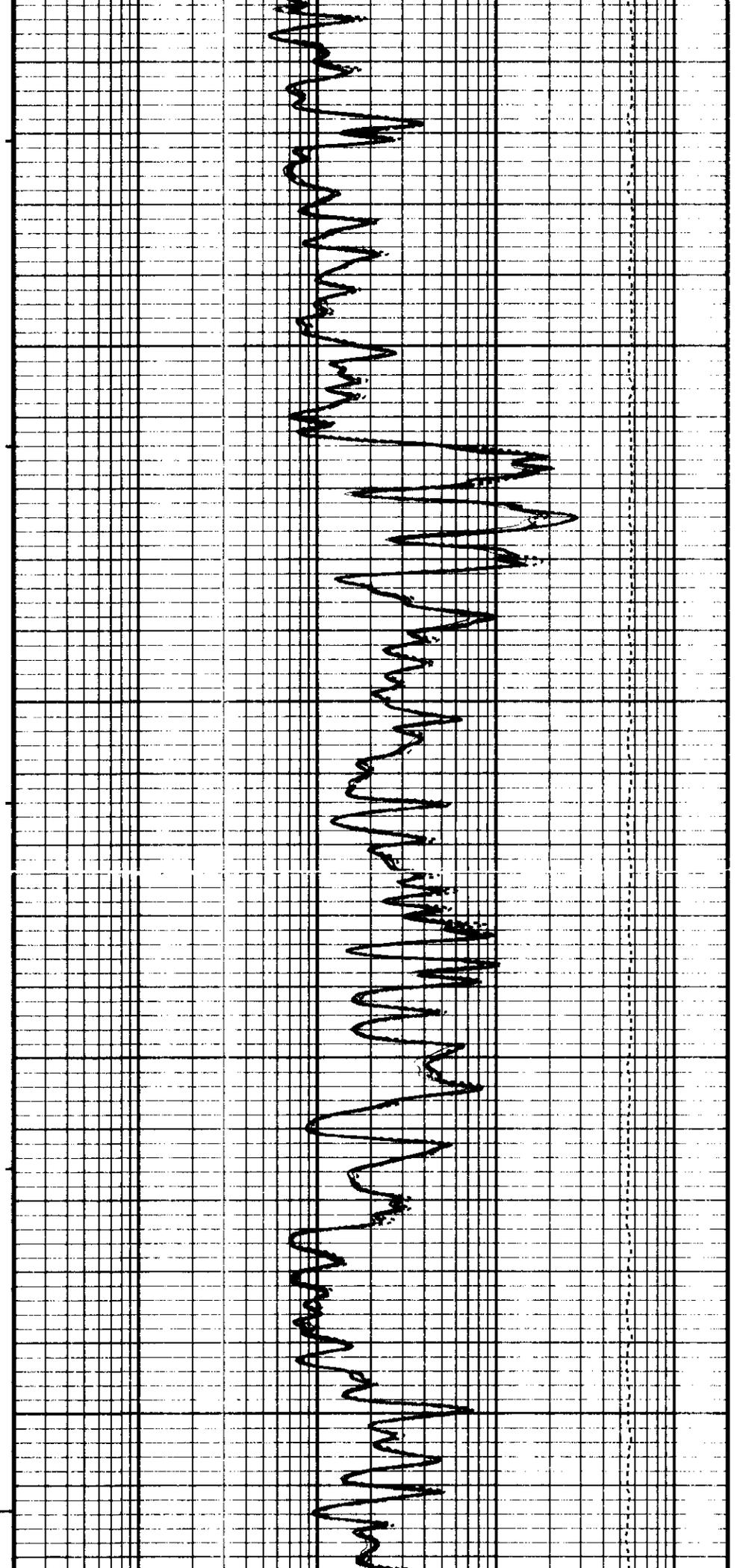
4400

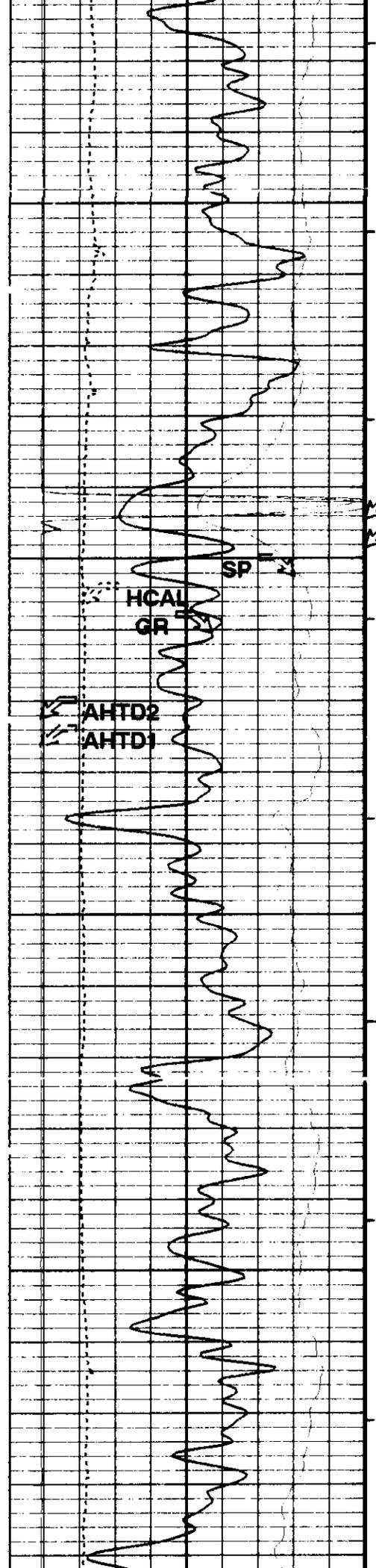




4500

4600





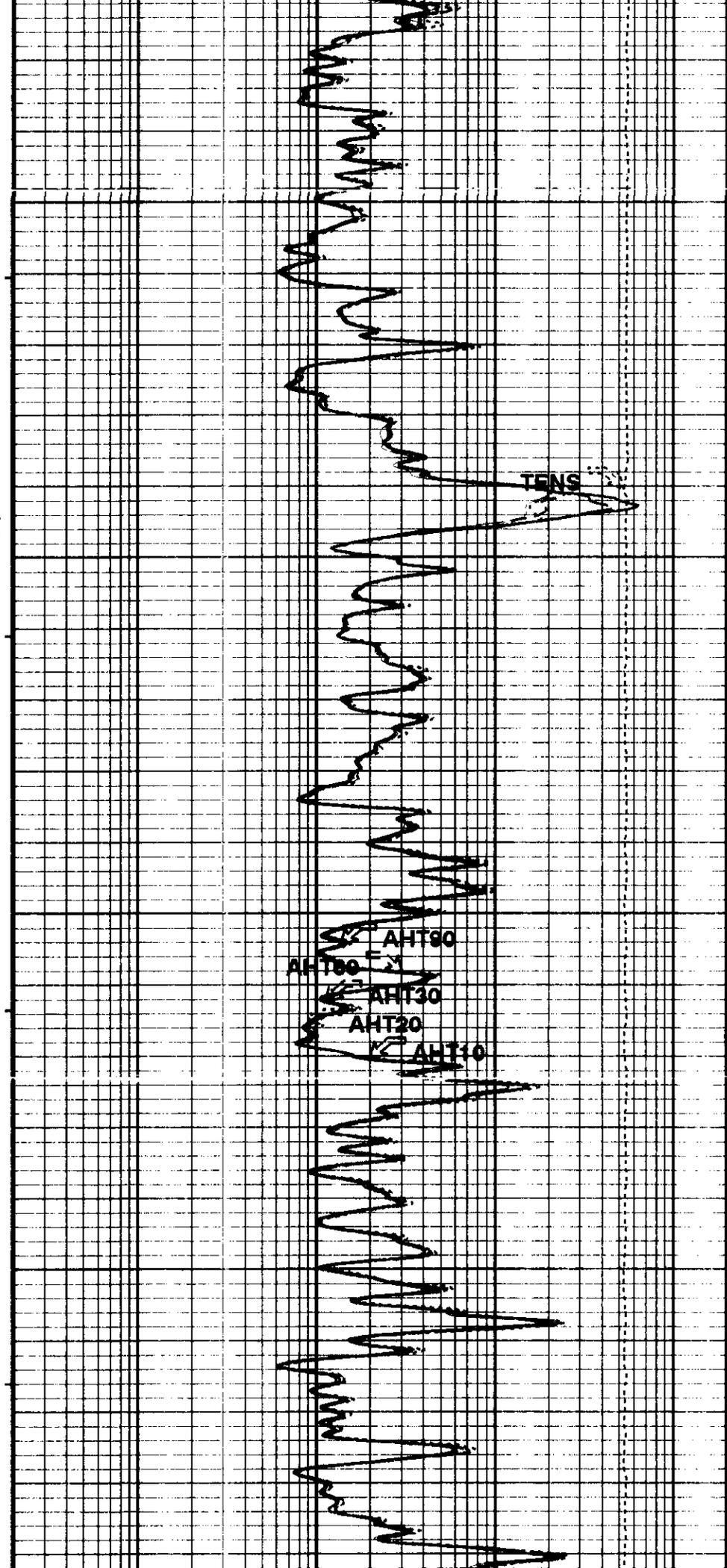
STIA
STIJ
8700

HCAI
GR

SP

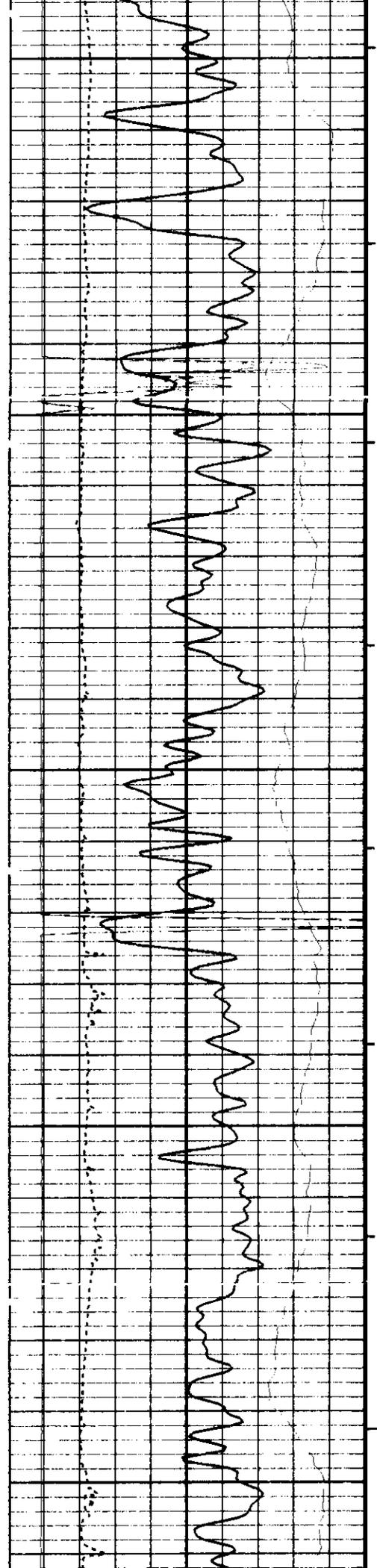
AHTD2
AHTD1

4800



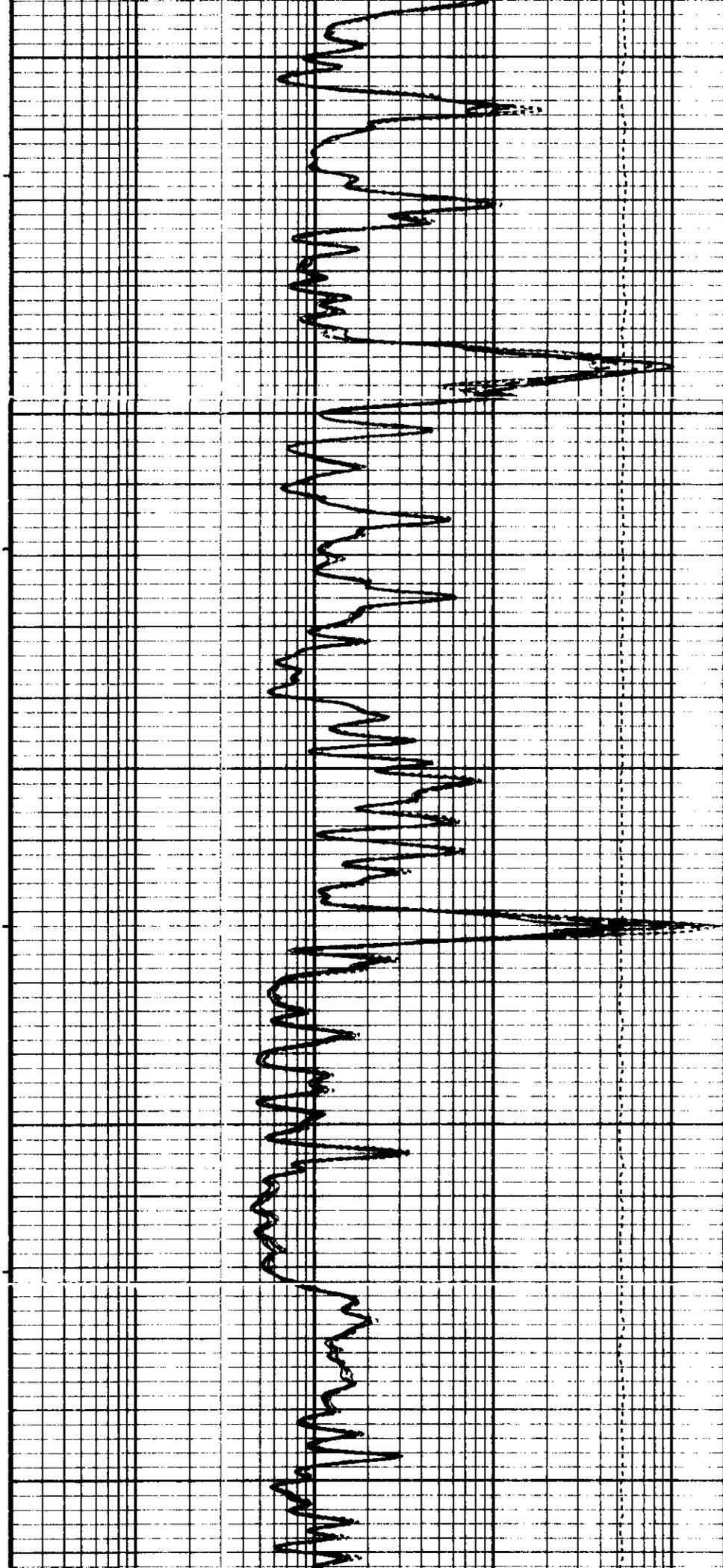
TENS

AHT90
AHT80
AHT30
AHT20
AHT10



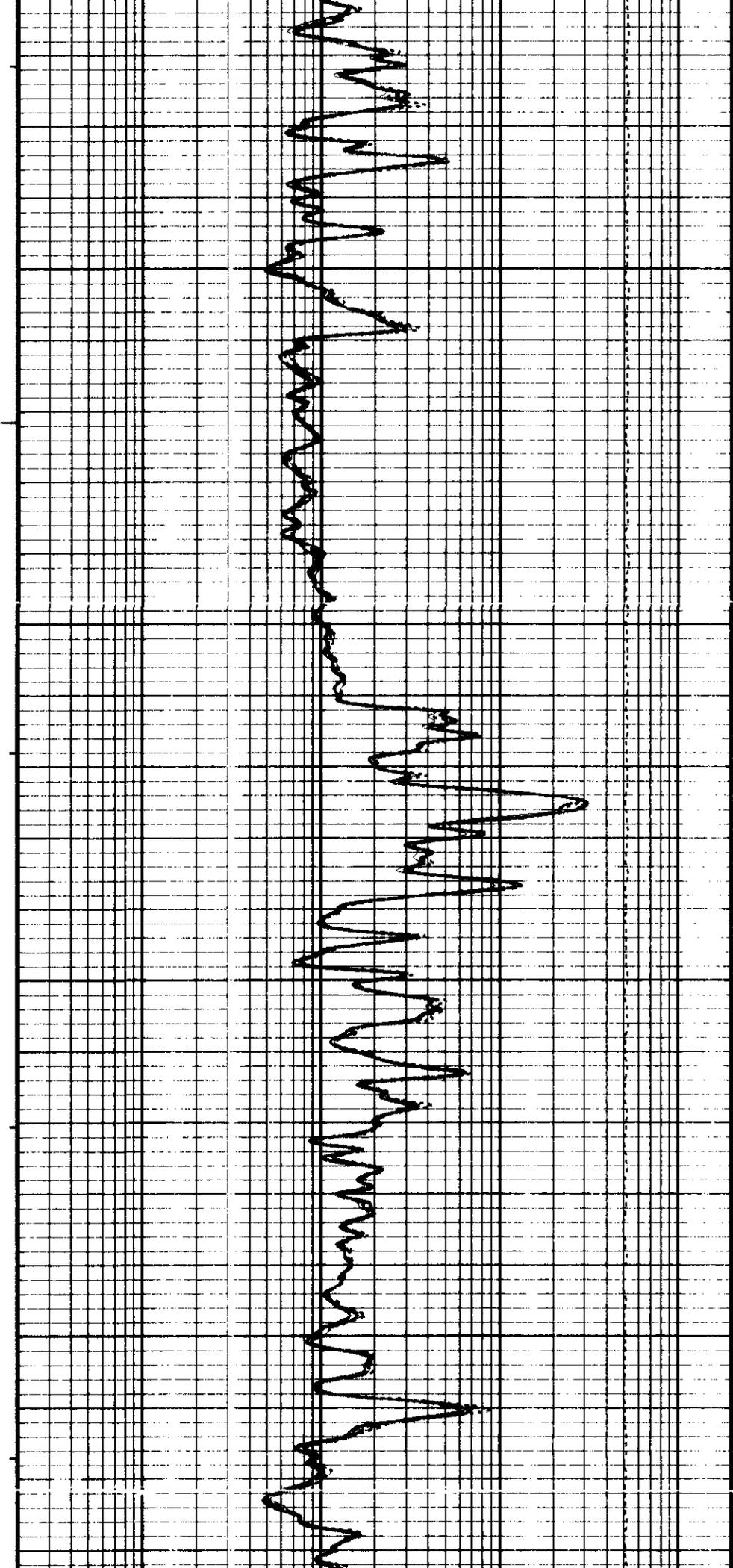
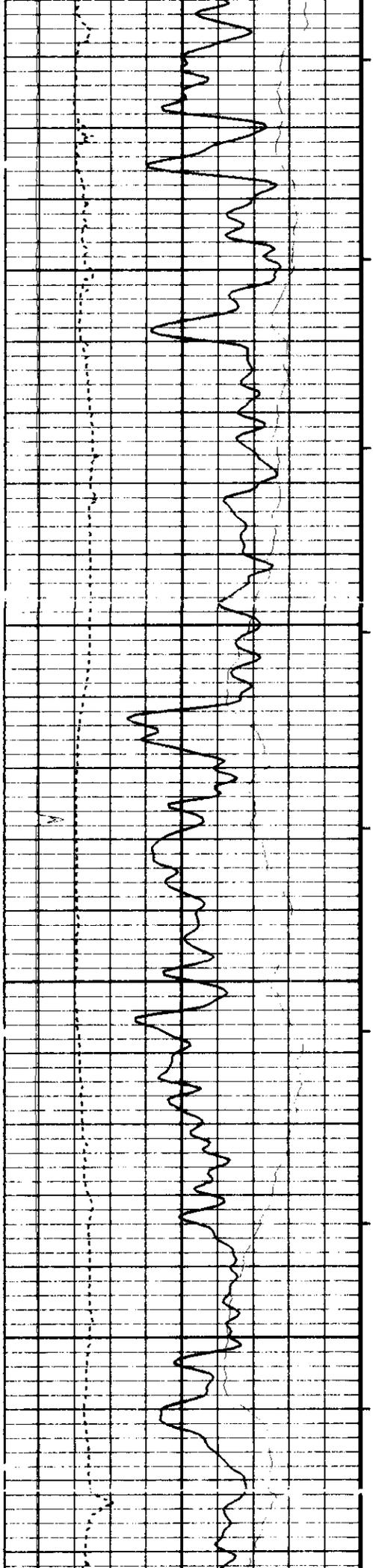
4900

5000



5100

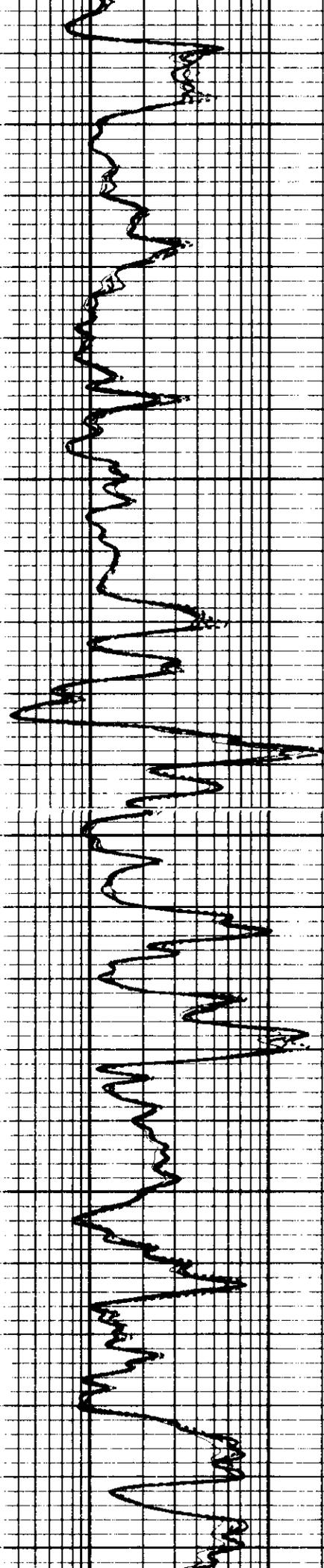
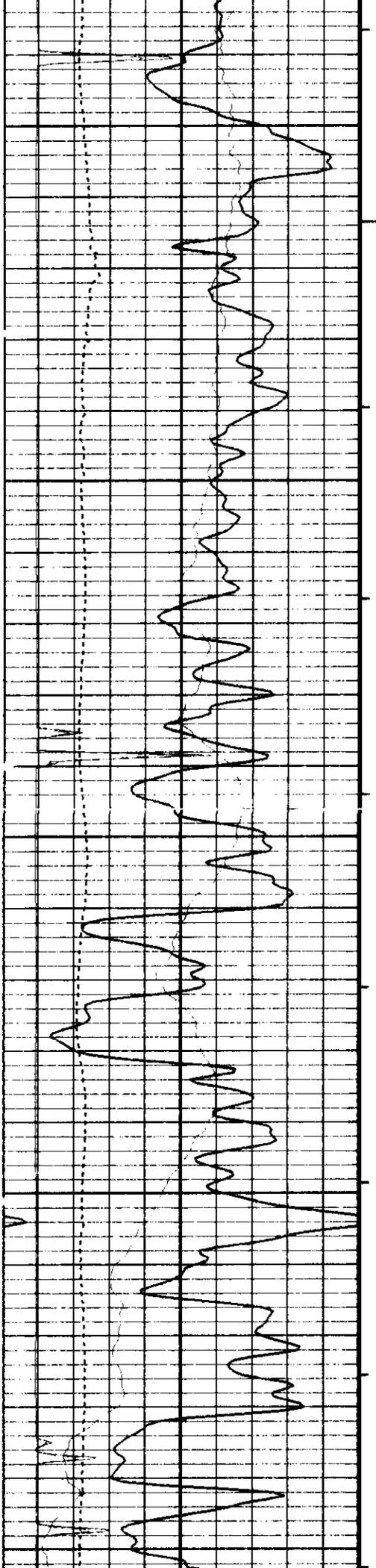
5200

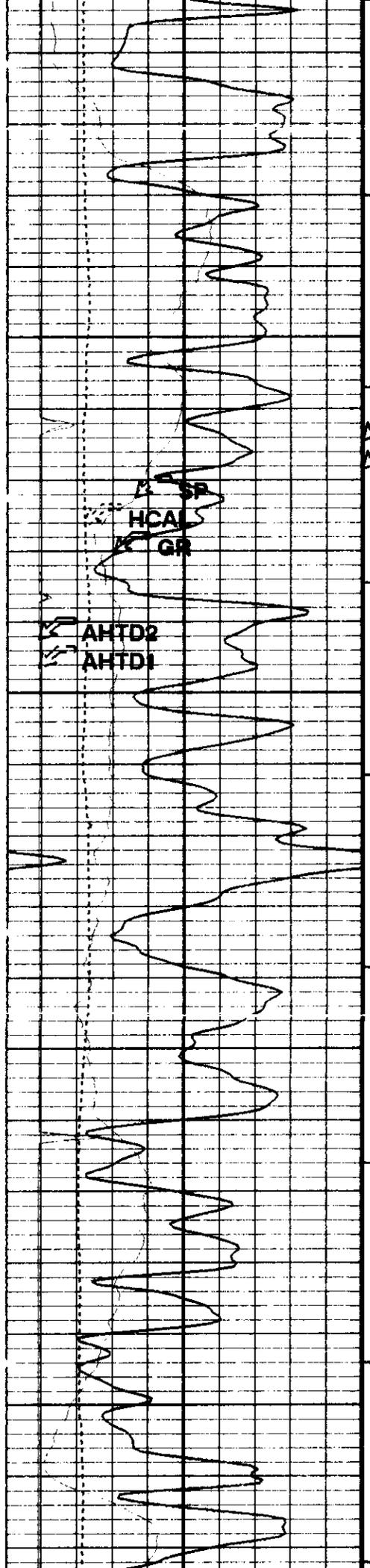


5300

5400

5500





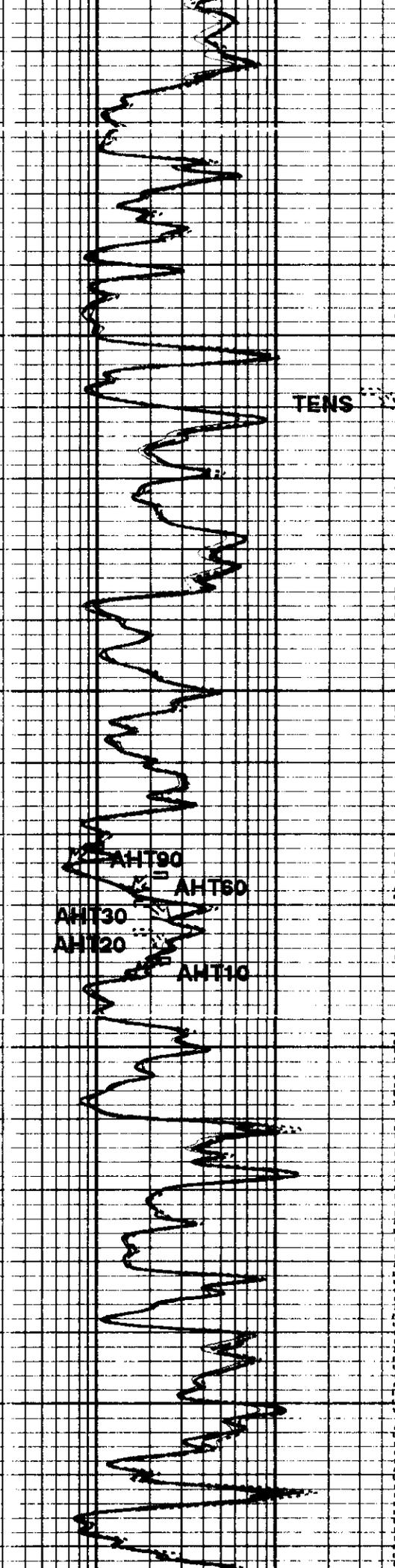
STIA
STIT

SP
HCAL
GR

AHTD2
AHTD1

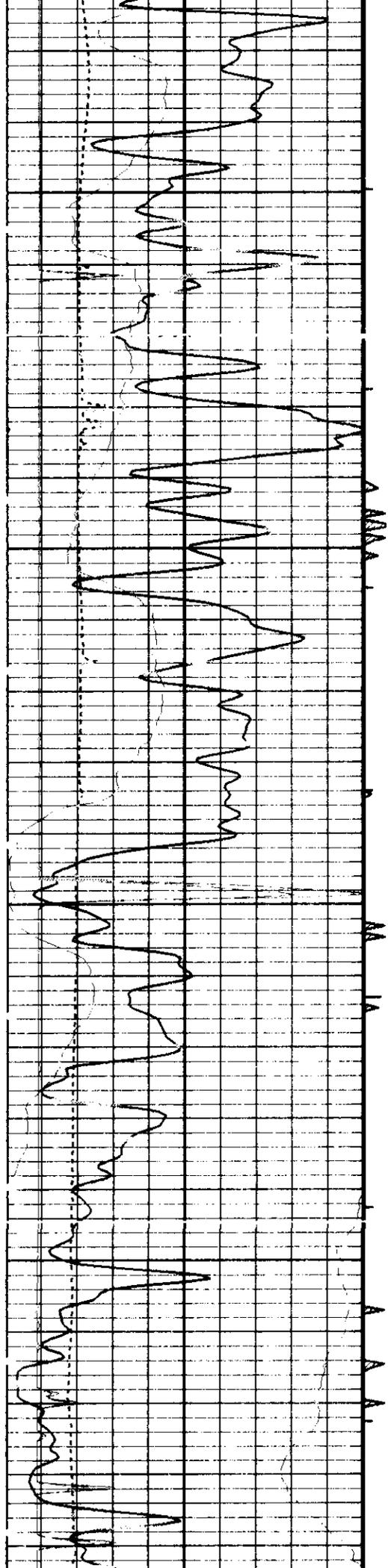
5600

5700



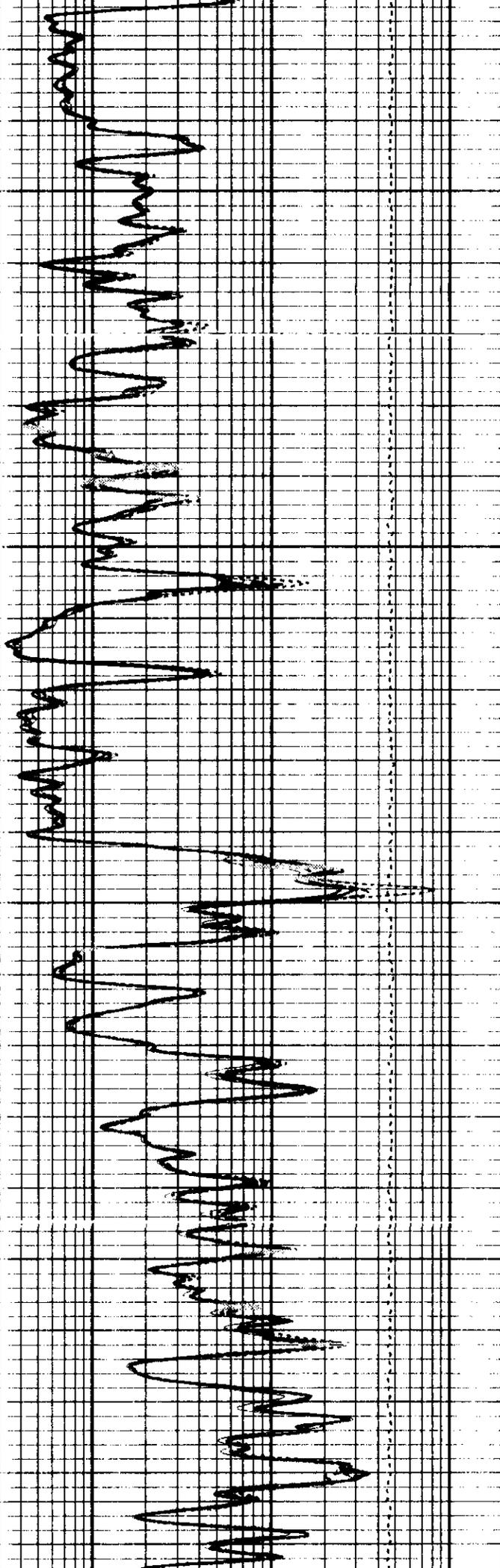
TENS

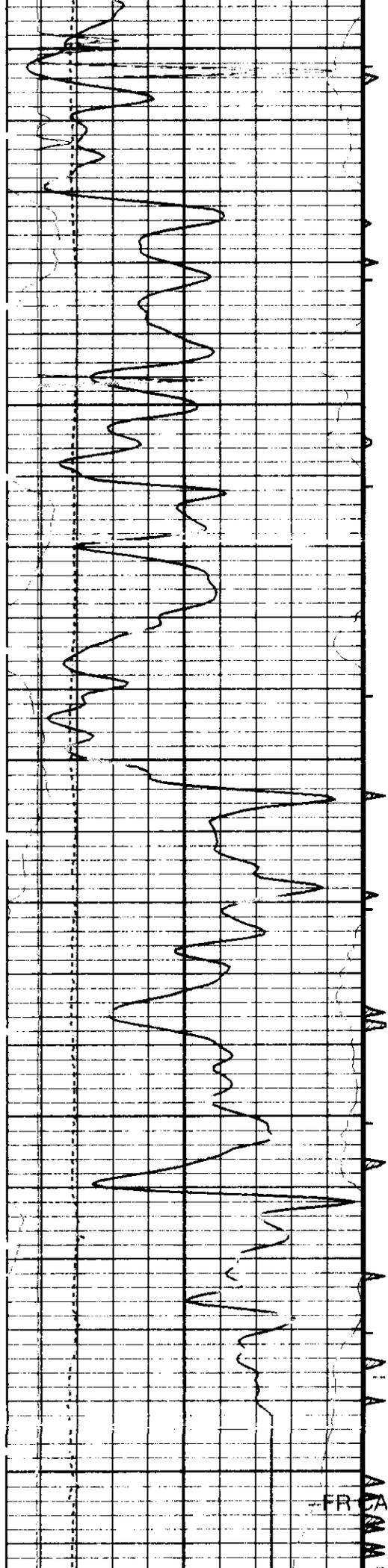
AHT90
AHT80
AHT30
AHT20
AHT10



5800

5900

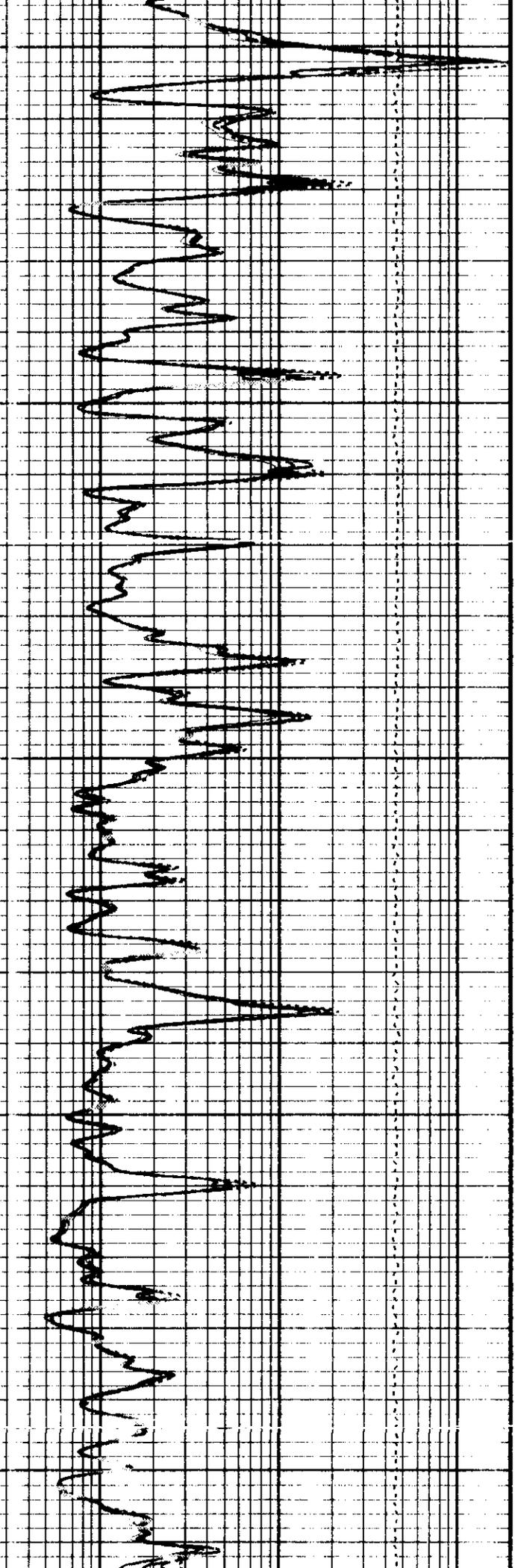




6000

6100

FR GR



AIT-H Inner Invasion Diameter (AHTD1) 0 (IN) 90	Stuck Stretch (STIT) 0 (F) 50	AIT-H 10 Inch Investigation (AHT10) (OHMM) 2000
AIT-H Outer Invasion Diameter (AHTD2) 0 (IN) 90	Cable Drag From STIA to STIT	AIT-H 20 Inch Investigation (AHT20) (OHMM) 2000
SP (SP) -80 (MV) 20	Tool/Tot Drag From D3T to STIA	AIT-H 30 Inch Investigation (AHT30) (OHMM) 2000
Gamma Ray (GR) 0 (GAPI) 200		AIT-H 60 Inch Investigation (AHT60) (OHMM) 2000
Caliper (HCAL) 6 (IN) 16		AIT-H 90 Inch Investigation (AHT90) (OHMM) 2000
MAIN PASS		Tension (TENS) 10000 (LBF) 0

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 10 F3
- Integrated Hole Volume Major Pip Every 100 F3
 - Integrated Cement Volume Minor Pip Every 10 F3
 - Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 100 (AHTNO)

...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 1.13 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT) 50.000 DEGF Bottom Temperature (BHT) 150.000 DEGF
 Total Depth (TD) 6160.000 FT
 Form Factor Exponent (FEXP) 2.000 Form Factor Numerator (FNUM) 1.000
 Mud Filtrate Sample Resistivity (RMFS) 2.240 OHMM Mud Filtrate Sample Temperature (MFST) 48.000 DEGF
 Resistivity Connate Water (RW) 1.000 OHMM

***** AIT-H Answer Product processing control parameters *****

(AHAPL): 4_BholeCorr_BasicLogs_RadialProf_RadialPar

(AHBHM): 2_ComputeStandoff (AHBLM): 6_One_Two_and_Four (AHRPM): 6_One_Two_and_Four

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff
AHCDE	AIT-H Casing Detection Enable	Yes
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000 FT
AHMRF	AIT-H Mud Resistivity Factor	1
AHSTA	AIT-H Tool Standoff	1.125 IN
BHT	Bottom Hole Temperature (used in calculations)	150 DEGF
BS	Bit Size	7.875 IN
DFD	Drilling Fluid Density	8.30 LB/G
DORL	Depth Offset Repeat Analysis	0.0 FT
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1

GCSE	Generalized Caliper Selection	HCAL	0	DEG
GDEV	Average Angular Deviation of Borehole from Normal	1.000000e-02		DF/F
GGRD	Geothermal Gradient	AITH_RESIST		
GRSF	Generalized Mud Resistivity Selection	LINEAR_ESTIMATE		
GTSE	Generalized Temperature Selection	NO		
HMPCO	HILT RTSC Measure points correction	TSCD_SpeedCorrect	NO	
HSCM	HILT Speed Correction Mode	YES		
HSTI	STI Uses HILT Acceleration	48.00		DEGF
MST	Mud Sample Temperature	50		DEGF
SHT	Surface Hole Temperature	0		MV
SPNV	SP Next Value	2.5		FT
STKT	STI Stuck Threshold	6160		FT
TD	Total Depth			

Format: AITH_BasicLogTwo Vertical Scale: 5" per 100' Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427
DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

Speed Corrected - Depth Matched LOG

Output DLIS Files

DEFAULT HILTC .008 FN:6 FIELD 15-OCT-1996 08:48

Input DLIS Files

DEFAULT HILTC .007 FN:5 FIELD 15-OCT-1996 08:37 6174.0 FT 5805.7 FT

Output DLIS Files

DEFAULT HILTC .008 FN:6 FIELD 15-OCT-1996 08:48

Integrated Hole/Cement Volume Summary

Hole Volume = 119.27 F3
 Cement Volume = 61.11 F3 (assuming 5.50 IN casing O.D.)
 Computed from 6160.0 FT to 5808.0 FT using data channel(s) HCAL

OP System Version: 7C0-427
DBM

HILTB-CTS	RPCVX-680	HOLEV	RPCVX-680
ALLRES	RPCVX-680	PERT	RPCVX-680

PIP SUMMARY

- └ Integrated Hole Volume Minor Pip Every 10 F3
- └ Integrated Hole Volume Major Pip Every 100 F3
 - └ Integrated Cement Volume Minor Pip Every 10 F3
 - └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

REPEAT ANALYSIS		TENS REP Curve (TENS REP)	
		10000	(LBF) 0

SP REP Curve (SP REP)		
-80	(MV)	20

HCAL REP Curve (HCAL REP)		
6	(IN)	16

GR REP Curve (GR REP)		
0	(GAPI)	200

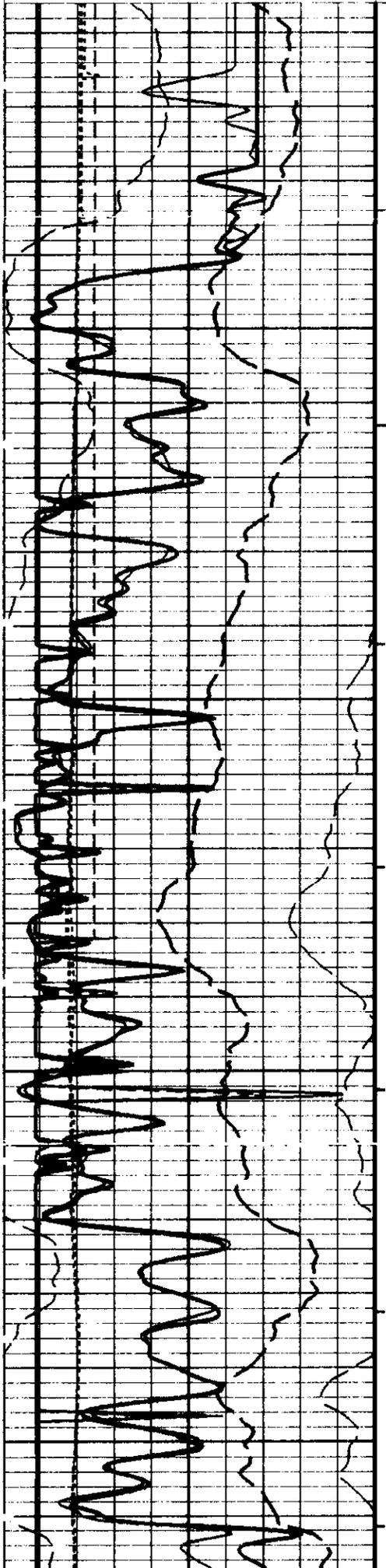
AHTD2 REP Curve (AHTD2 REP)		
0	(IN)	90

AHT90 REP Curve (AHT90 REP)		
0.2	(OHMM)	2000

AHT60 REP Curve (AHT60 REP)		
0.2	(OHMM)	2000

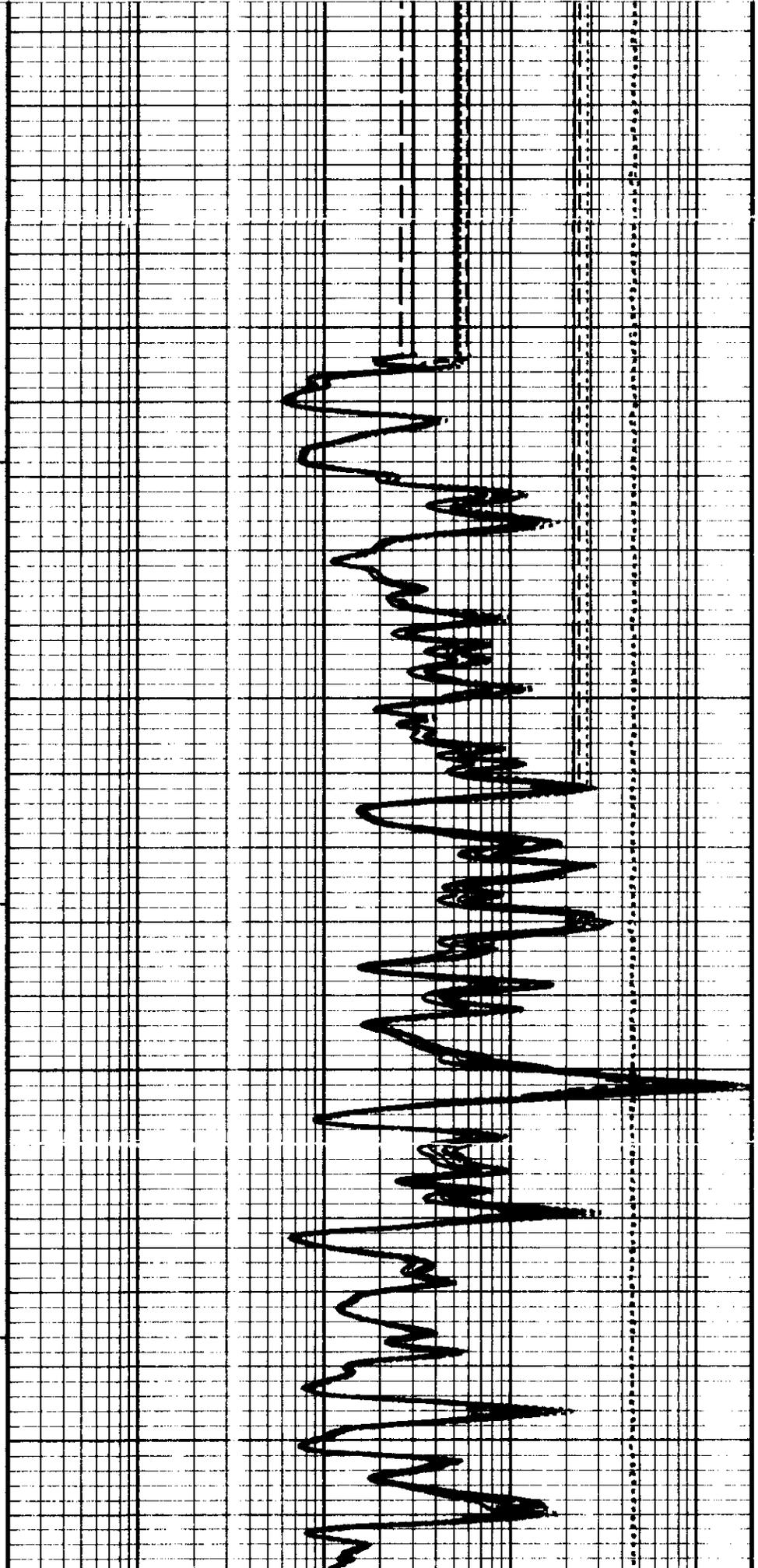
AHT30 REP Curve (AHT30 REP)		
0.2	(OHMM)	2000

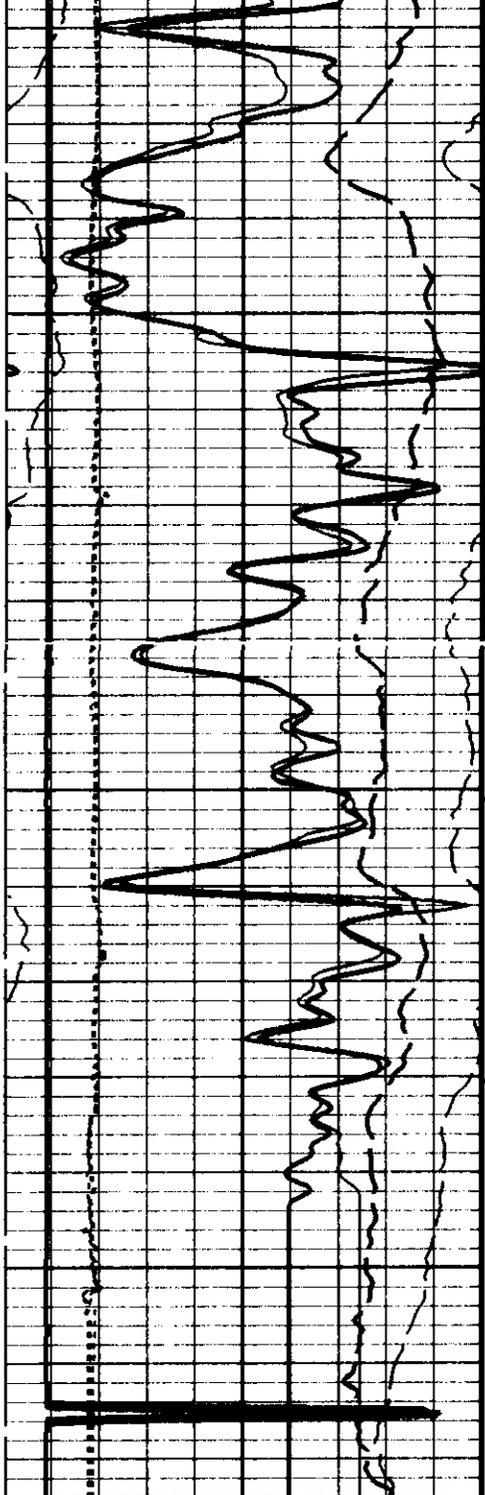
AHT20 REP Curve (AHT20 REP)		
0.2	(OHMM)	2000



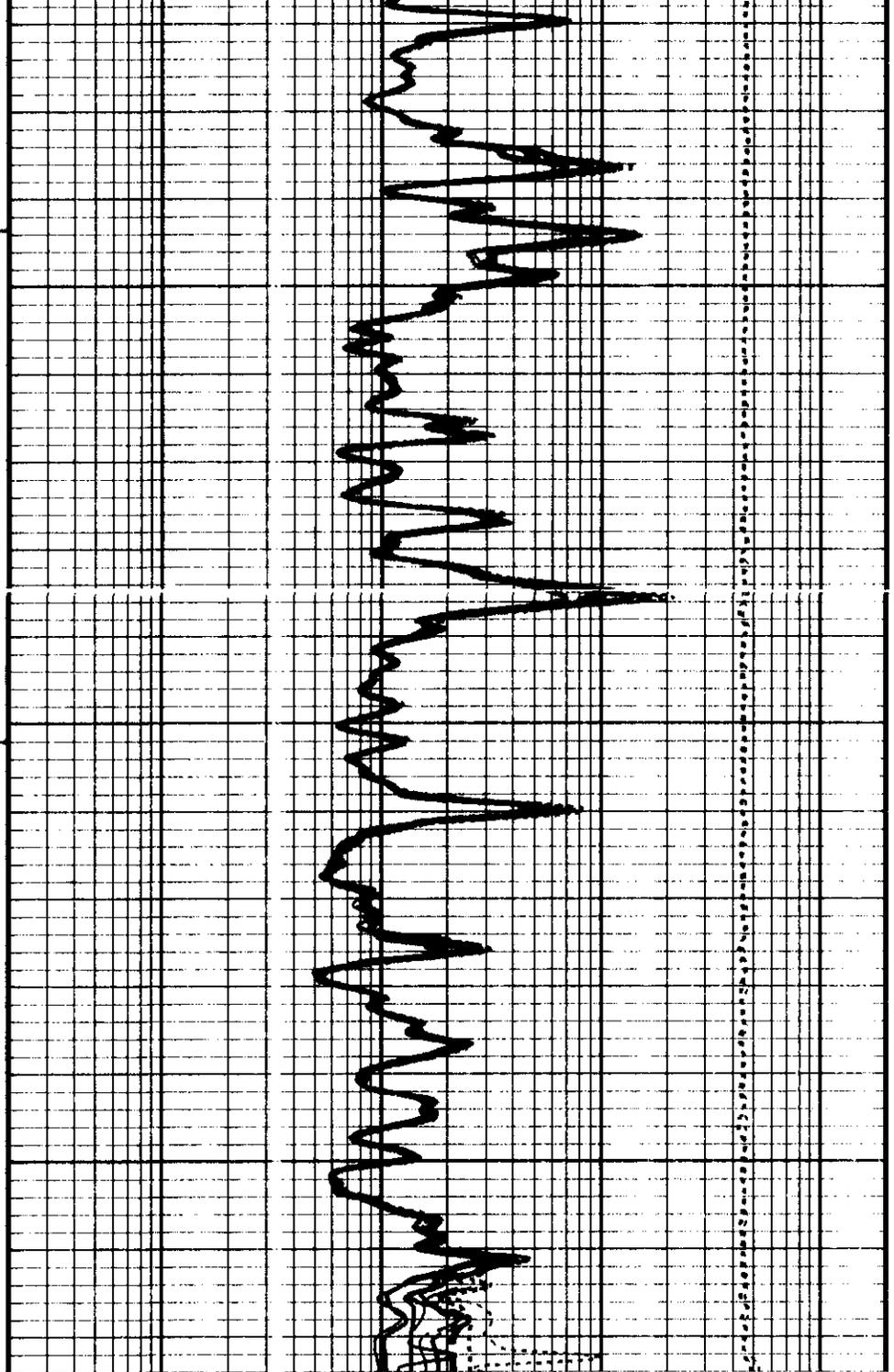
5900

6000





6100



AHTD1 REP Curve (AHTD1 REP)		
0	(IN)	90
AHTD2 REP Curve (AHTD2 REP)		
0	(IN)	90
GR REP Curve (GR REP)		
0	(GAPI)	200
HCAL REP Curve (HCAL REP)		
6	(IN)	16
SP REP Curve (SP REP)		
-80	(MV)	20

AHT10 REP Curve (AHT10 REP)		
0.2	(OHMM)	2000
AHT20 REP Curve (AHT20 REP)		
0.2	(OHMM)	2000
AHT30 REP Curve (AHT30 REP)		
0.2	(OHMM)	2000
AHT60 REP Curve (AHT60 REP)		
0.2	(OHMM)	2000
AHT90 REP Curve (AHT90 REP)		
0.2	(OHMM)	2000

REPEAT ANALYSIS

TENS REP Curve (TENS REP)		
10000	(LBF)	0

PIP SUMMARY

Integrated Hole Volume Minor Pin Every 10 E3

- └ Integrated Hole Volume Major Pip Every 100 F3
- └ Integrated Cement Volume Minor Pip Every 10 F3
- └ Integrated Cement Volume Major Pip Every 100 F3

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 100 (AHTNO)

...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
 Tool is run in ECCENTERED mode with a tool stand-off of 1.13 IN. Bit Size is 7.88 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT) 50.000 DEGF Bottom Temperature (BHT) 150.000 DEGF
 Total Depth (TD) 6160.000 FT
 Form Factor Exponent (FEXP) 2.000 Form Factor Numerator (FNUM) 1.000
 Mud Filtrate Sample Resistivity (RMFS) 2.240 OHMM Mud Filtrate Sample Temperature (MFST) 48.000 DEGF
 Resistivity Connate Water (RW) 1.000 OHMM

***** AIT-H Answer Product processing control parameters *****

Playback Mode: NORMAL

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff
AHCDE	AIT-H Casing Detection Enable	Yes
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000 FT
AHMRF	AIT-H Mud Resistivity Factor	1
AHSTA	AIT-H Tool Standoff	1.125 IN
BHT	Bottom Hole Temperature (used in calculations)	150 DEGF
BS	Bit Size	7.875 IN
DFD	Drilling Fluid Density	8.30 LB/G
DORL	Depth Offset Repeat Analysis	0.0 FT
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSE	Generalized Caliper Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	1.000000e-02 DF/F
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
HMPCO	HILT RTSC Measure points correction	NO
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect
HSTI	STI Uses HILT Acceleration	YES
MST	Mud Sample Temperature	48.00 DEGF
SHT	Surface Hole Temperature	50 DEGF
SPNV	SP Next Value	0 MV
TD	Total Depth	6160 FT

Format: AITH_BasicLogTwo_REP

Vertical Scale: 5" per 100'

Graphics File Created: 15-OCT-1996 08:48

OP System Version: 7C0-427 DBM

HILTB-CTS
ALLRES

RPCVX-680
RPCVX-680

HOLEV
PERT

RPCVX-680
RPCVX-680

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT HILTC .007 FN:5 FIELD 15-OCT-1996 08:37 6174.0 FT 5805.7 FT

Output DLIS Files

DEFAULT HILTC .008 FN:6 FIELD 15-OCT-1996 08:48

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master: Calibration out of date Jun 15 08:08 1996 Before: Oct 15 08:33 1996							
Thru Cal Magnitude - 0	0	0.6235	0.6225	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.278	1.276	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.6344	0.6331	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.7182	0.7163	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.342	1.340	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.954	1.951	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.953	1.949	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.393	1.390	N/A	N/A	N/A	V
Phase - 0	0	55.81	57.11	N/A	N/A	N/A	DEG
Phase - 1	0	54.71	56.01	N/A	N/A	N/A	DEG
Phase - 2	0	50.99	52.29	N/A	N/A	N/A	DEG
Phase - 3	0	50.20	51.51	N/A	N/A	N/A	DEG
Phase - 4	0	43.97	45.27	N/A	N/A	N/A	DEG
Phase - 5	0	42.09	43.40	N/A	N/A	N/A	DEG
Phase - 6	0	42.09	43.40	N/A	N/A	N/A	DEG
Phase - 7	0	38.45	39.78	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Auxiliary

Master: Calibration out of date Jun 15 08:08 1996 Before: Oct 15 08:33 1996							
AIT-H SPA Plus	990.5	993.0	993.2	N/A	N/A	N/A	MV
AIT-H SPA Zero	0	-0.2287	-0.2033	N/A	N/A	N/A	MV
AIT-H Temperature Plus	0.9150	0.9198	0.9200	N/A	N/A	N/A	V
AIT-H Temperature Zero	0	-0.0002239	-0.0001954	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Test Loop Gain Correction

Master: Calibration out of date Jun 15 08:08 1996							
Test Loop Gain Magnitude - 0	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.017	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.015	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9943	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	1.007	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	1.014	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.026	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.4351	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.4477	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	-0.07914	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	-0.01529	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	-0.08327	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.3508	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.01955	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.3622	N/A	N/A	N/A	N/A	DEG

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Sonde Error Correction

Master: Calibration out of date Jun 15 08:08 1996							
R Sonde Error Correction - 0	0	-117.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	162.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	107.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	60.03	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	24.85	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	13.28	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.377	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-0.4773	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	-242.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	281.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	103.4	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	-8.335	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-7.819	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	3.205	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	5.059	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	10.05	N/A	N/A	N/A	N/A	MM/M

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Mud Gain Correction

Master: Calibration out of date Jun 15 08:08 1996							
Coarse - Mag, Real, Imag - 0	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.100	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.100	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.098	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.099	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.099	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary

Before: Oct 15 03:13 1996

BS Window Ratio	0.9774	N/A	0.9864	N/A	N/A	N/A	N/A	
BS Window Sum	16100	N/A	16120	N/A	N/A	N/A	N/A	CPS
SS Window Ratio	0.4734	N/A	0.4740	N/A	N/A	N/A	N/A	
SS Window Sum	11670	N/A	11680	N/A	N/A	N/A	N/A	CPS
LS Window Ratio	0.2997	N/A	0.2989	N/A	N/A	N/A	N/A	
LS Window Sum	1610	N/A	1600	N/A	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations

Before: Oct 15 03:13 1996

BS PM High Voltage (Command)	1535	N/A	1490	N/A	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1646	N/A	1652	N/A	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1879	N/A	1884	N/A	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration

Before: Oct 15 03:13 1996

BS Crystal Resolution	12.73	N/A	12.37	N/A	N/A	N/A	N/A	%
SS Crystal Resolution	9.561	N/A	9.611	N/A	N/A	N/A	N/A	%
LS Crystal Resolution	9.822	N/A	9.970	N/A	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration

Before: Oct 15 03:15 1996

Raw B0 Resistivity	3875	N/A	3854	N/A	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3810	N/A	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3829	N/A	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration

Before: Oct 15 03:14 1996

HILT Caliper Zero Measurement	8.000	N/A	7.839	N/A	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.11	N/A	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration

Before: Oct 15 03:10 1996

Gamma Ray Background	30.00	N/A	36.81	N/A	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	180.4	N/A	180.4	N/A	N/A	N/A	16.40	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement

Master: Aug 2 02:04 1996 Before: Oct 15 03:12 1996

CNTC Background	25.80	25.80	25.79	N/A	N/A	3.870	CPS
CFTC Background	26.10	26.10	25.13	N/A	N/A	3.915	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration

Before: Oct 15 08:36 1996

Z-Axis Acceleration	32.19	N/A	32.06	N/A	N/A	N/A	F/SEC
---------------------	-------	-----	-------	-----	-----	-----	-------

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 83.0 DEGF.
Thermal Housing Size 3.375 IN.

High resolution Integrated Logging Tool-CTS , Equipment Identification

Primary Equipment:

Array Induction Tool - H	AIT - H	
Array Induction Sonde	AHIS - BA	
HILT high-Resolution Mechanical Sonde	HRMS - B	830
HILT Rxo Gamma-ray Device	HRGD -	818
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	
Micro Cylindrically Focused Log Device	MCFL -	

Auxiliary Equipment:

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6235		0.6050	55.81		71.00
	Before	0.6225			57.11		
	Master	1.028			64.71		

1	Master	1.276			1.270	56.01			70.00
2	Master	0.6344			0.6230	50.99			66.00
	Before	0.6331				52.29			
3	Master	0.7182			0.7040	50.20			65.00
	Before	0.7168				51.51			
4	Master	1.342			1.337	43.97			59.00
	Before	1.340				45.27			
5	Master	1.954			1.955	42.09			57.00
	Before	1.951				43.40			
6	Master	1.953			1.955	42.09			57.00
	Before	1.949				43.40			
7	Master	1.393			1.415	38.45			53.00
	Before	1.390				39.78			
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)		(Nominal)	Nom 60.00 (Maximum)	

Master: Calibration out of date Jun 15 08:08 1996

Before: Oct 15 08:33 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration						
Electronics Calibration Check - Auxiliary						
Phase	AIT-H SPA Plus MV	Value	Phase	AIT-H SPA Zero MV	Value	
Master		993.0	Master		-0.2287	
Before		993.2	Before		-0.2039	
		941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)		
				-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
Phase	AIT-H Temperature Plus V	Value	Phase	AIT-H Temperature Zero V	Value	
Master		0.9198	Master		-0.0002239	
Before		0.9200	Before		-0.0001954	
		0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)		
				-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)

Master: Calibration out of date Jun 15 08:08 1996

Before: Oct 15 08:33 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration						
Test Loop Gain Correction						
Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG
0	1.016				0.4351	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.014				0.4877	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.017				-0.07914	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.015				-0.01529	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9943				-0.09327	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.007				-0.3508	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.014				0.01955	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.026				-0.3622	
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		
				-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Sonde Error Correction								
Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-117.3				-242.4			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-225.0 (Minimum)	0 (Nominal)	225.0 (Maximum)
1	162.8				281.1			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	107.8				103.4			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	60.03				-8.335			
		39.00 (Minimum)	64.00 (Nominal)	89.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	24.85				-7.819			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	13.28				3.205			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.377				5.059			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.4773				10.05			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

High resolution Integrated Logging Tool-CTS Wellsite Calibration								
Mud Gain Correction								
Idx	Value	Coarse - Mag. Real. Imag			Value	Fine - Mag. Real. Imag		
0	1.100				1.098			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
1	1.100				1.099			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
2	1.100				1.099			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

High resolution Integrated Logging Tool-CTS Wellsite Calibration											
Stab Measurement Summary											
Phase	BS Window Ratio		Value	Phase	SS Window Ratio		Value	Phase	LS Window Ratio		Value
Before			0.9864	Before			0.4748	Before			0.2980
	0.9285 (Minimum)	0.9774 (Nominal)	1.026 (Maximum)		0.4497 (Minimum)	0.4734 (Nominal)	0.4971 (Maximum)		0.2848 (Minimum)	0.2997 (Nominal)	0.3147 (Maximum)
Phase	BS Window Sum CPS		Value	Phase	SS Window Sum CPS		Value	Phase	LS Window Sum CPS		Value
Before			16120	Before			11680	Before			1600
	15290 (Minimum)	16100 (Nominal)	16900 (Maximum)		11090 (Minimum)	11670 (Nominal)	12260 (Maximum)		1529 (Minimum)	1610 (Nominal)	1690 (Maximum)

High resolution Integrated Logging Tool-CTS Wellsite Calibration											
Photo-multiplier High Voltages Calibrations											
Phase	BS PM High Voltage (Command) V		Value	Phase	SS PM High Voltage (Command) V		Value	Phase	LS PM High Voltage (Command) V		Value
Before			1490	Before			1652	Before			1864
	1435 (Minimum)	1535 (Nominal)	1635 (Maximum)		1546 (Minimum)	1646 (Nominal)	1746 (Maximum)		1779 (Minimum)	1879 (Nominal)	1979 (Maximum)

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Crystal Quality Resolutions Calibration											
Phase	BS Crystal Resolution %		Value	Phase	SS Crystal Resolution %		Value	Phase	LS Crystal Resolution %		Value
Before			12.37	Before			3.611	Before			9.971
	11.73 (Minimum)	12.73 (Nominal)	13.73 (Maximum)		8.561 (Minimum)	9.561 (Nominal)	10.56 (Maximum)		8.822 (Minimum)	9.822 (Nominal)	10.82 (Maximum)

Before: Oct 15 03:13 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration											
Phase	Raw B0 Resistivity OHMM		Value	Phase	Raw B1 Resistivity OHMM		Value	Phase	Raw B2 Resistivity OHMM		Value
Before			3854	Before			3810	Before			3879
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)		3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: Oct 15 03:15 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

HILT Caliper Calibration							
Phase	HILT Caliper Zero Measurement IN		Value	Phase	HILT Caliper Plus Measurement IN		Value
Before			7.839	Before			12.11
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)		9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)

Before: Oct 15 03:14 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Detector Calibration											
Phase	Gamma Ray Background GAPI		Value	Phase	Gamma Ray (Jig - Bkg) GAPI		Value	Phase	Gamma Ray (Calibrated) GAPI		Value
Before			36.81	Before			180.4	Before			165.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		164.0 (Minimum)	180.4 (Nominal)	196.8 (Maximum)		150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: Oct 15 03:10 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Zero Measurement							
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value
Master			25.80	Master			26.10
Before			25.79	Before			25.13
	5.000 (Minimum)	25.80 (Nominal)	40.00 (Maximum)		5.000 (Minimum)	26.10 (Nominal)	40.00 (Maximum)

Master: Aug 2 02:04 1996

Before: Oct 15 03:12 1996

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Accelerometer Calibration		
Phase	Z-Axis Acceleration F/S2	Value
Before		32.06
	31.53 (Minimum)	32.19 (Nominal)
		32.84 (Maximum)

Before: Oct 15 08:36 1996

COMPANY **PETROGLYPH OPERATING**
 COMPANY **NC**
 WELL **UTE TRIBAL #17 12**
 FIELD **ANTELOPE CREEK**
 COUNTY **DUCHESNE**

BOTTOM LOG INTERVAL	6164 F
SCHLUMBERGER DEPTH	6172 F
DEPTH DRILLER	6160 F
KELLY BUSHING	6092 F
DRILL FLOOR	6091 F

STATE:

UTAH

GROUND LEVEL

6082 F

Schlumberger

**ARRAY INDUCTION
with Linear Correlation
GAMMA RAY LOG**

ATTACHMENT NO. 9

LIST OF OWNERS AND AFFIDAVIT NOTIFICATION

AFFIDAVIT OF MAILING

I, Kevin Dickey, Vice President, Operations, Petroglyph Energy, being first duly sworn, depose and state as follows: On July 24th, 2015, I caused to be mailed by certified mail, postage prepaid, return receipt requested, a copy of the Application to convert 1 well that appears on the attached sheet to water injection for enhanced recovery. It was sent to all parties who have an interest within ¼ mile radius from this well. The attached list contains the names of all parties who were notified.

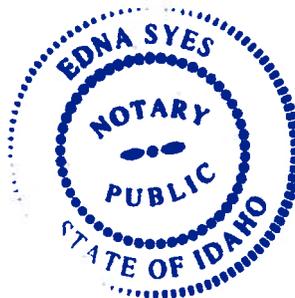
Dated on this 24th day of July, 2015


Kevin Dickey

Vice President, Operations
Petroglyph Energy

The forgoing affidavit was subscribed and sworn to before me by Kevin Dickey.

This 24 day of July, 2015.




Notary Public

July 24th, 2015

Mineral, Surface, and Working Interest Owners

To Whom It May Concern,

On July 24th, 2015 Petroglyph Energy Inc. submitted to the Environmental Protection Agency an application requesting approval to convert 19 wells to water injection wells in an enhanced recovery program. The well(s) which were submitted are all located in Antelope Creek Field which is operated under a Cooperative Plan of Development between the Ute Tribe and Petroglyph Energy.

Owners at Well's Location

Owners within Well's ¼ mile radius

Mineral: Ute Tribe

No others

Operator: Petroglyph

No others

Surface: Ute Tribe

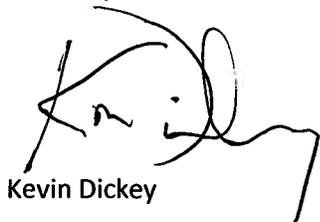
No others

Working Interest: Petroglyph 100%

Anyone who would be directly and adversely affected by the authorization of the underground disposal into the Upper Green River formation may file a written request for a public hearing before the EPA. Logs and additional information on the subject wells are on file with the EPA, Groundwater Program, Mail Code 8P-W-UIC, 1595 Wynkoop St, Denver, Colorado 80202-1129.

Please contact Kevin Dickey at 208-685-7600 if you have any questions.

Sincerely,



Kevin Dickey

Vice President, Operations, Petroglyph Energy

Enclosure

PETROGLYPH OPERATING COMPANY, INC.

ANTELOPE CREEK FIELD

WELLS TO BE CONVERTED TO INJECTION

Well Name and Number	Footages	Section, Township, and Range
Ute Tribal 03-05	SHL: 2871' FNL & 752' FWL BHL: 2340' FNL & 684' FWL	3, T5S-R3W
Ute Tribal 03-12	2272' FSL & 575' FWL	3, T5S-R3W
Ute Tribal 08-11	2187' FSL 2011' FWL	8, T5S-R3W
Ute Tribal 08-12	2100' FSL & 515' FWL	8, T5S-R3W
Ute Tribal 09-01	770' FNL & 1059' FEL	9, T5S-R3W
Ute Tribal 09-04	585' FNL & 722' FWL	9, T5S-R3W
Ute Tribal 10-03	600' FNL & 1650' FWL	10, T5S-R3W
Ute Tribal 17-04	697' FNL & 636' FWL	17, T5S-R3W
Ute Tribal 17-05	1797' FNL & 620' FWL	17, T5S-R3W
Ute Tribal 17-12	2527' FSL & 612' FWL	17, T5S-R3W
Ute Tribal 20-06	2050' FNL & 1950' FWL	20, T5S-R3W
Ute Tribal 20-07	1980' FNL & 1980' FEL	20, T5S-R3W
Ute Tribal 20-11	1959' FSL & 2033' FWL	20, T5S-R3W
Ute Tribal 20-15	574' FSL & 1806' FEL	20, T5S-R3W
Ute Tribal 31-03	422' FNL & 2338' FWL	31, T5S-R3W
Ute Tribal 31-05	1980' FNL & 660' FWL	31, T5S-R3W
Ute Tribal 31-07	1976' FNL & 2168' FEL	31, T5S-R3W
Ute Tribal 31-12	1999' FSL & 748' FWL	31, T5S-R3W
Ute Tribal 36-08-E4	1796' FNL & 713' FEL	36, T5S-R4W



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		T/A	C
U			

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 03-05	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')			
Latitude			Longitude			Township and Range								<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line		
						3	SS	3W	NW						

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes i, ii, iii, (and other classes) complete and submit on a separate sheet(s) Attachments A--J (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	TIA	C
U		

Read Attached instructions Before Starting
For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 03-12	

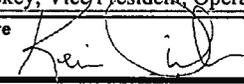
X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project													XII. Indian Lands (Mark 'x')		
Latitude			Longitude			Township and Range									
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
						3	5S	3W	SW						

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes i, ii, iii, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

 United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>					I. EPA ID Number _____		T/A	C						
Read Attached Instructions Before Starting For Official Use Only														
Application approved mo day year		Date received mo day year		Permit Number		Well ID		FINDS Number						
II. Owner Name and Address					III. Operator Name and Address									
Owner Name Petroglyph Energy, Inc.					Owner Name Petroglyph Energy, Inc.									
Street Address 960 Broadway Ave. Suite 500 PO Box 70019			Phone Number (208) 685-7600		Street Address 960 Broadway Ave. Suite 500 PO Box 70019			Phone Number (208) 685-7600						
City Boise		State ID	ZIP CODE 83707		City Boise		State ID	ZIP CODE 83707						
IV. Commercial Facility		V. Ownership		VI. Legal Contact		VII. SIC Codes								
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other		<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator										
VIII. Well Status (Mark "x")														
<input checked="" type="checkbox"/> A	Date Started mo day year		<input checked="" type="checkbox"/> B. Modification/Conversion				<input type="checkbox"/> C. Proposed							
Operating														
IX. Type of Permit Requested (Mark "x" and specify if required)														
<input type="checkbox"/> A. Individual		<input checked="" type="checkbox"/> B. Area		Number of Existing Wells 111		Number of Proposed Wells 1		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 08-11						
X. Class and Type of Well (see reverse)														
A. Class(es) (enter code(s))		B. Type(s) (enter code(s))		C. If class is "other" or type is code 'x,' explain				D. Number of wells per type (if area permit)						
II		R						1 well, type R						
XI. Location of Well(s) or Approximate Center of Field or Project								XII. Indian Lands (Mark 'x')						
Latitude		Longitude			Township and Range									
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
						8	SS	3W	SW					
XIII. Attachments														
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.														
XIV. Certification														
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)														
A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations						B. Phone No. (Area Code and No.) (208) 685-7600								
C. Signature 						D. Date Signed 07/27/2015								



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		T/A	C
U			

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 08-12	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')		
Latitude			Longitude			Township and Range								
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
						8	5S	3W	SW					

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification	
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)	
A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 09-01	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project											XII. Indian Lands (Mark 'x')		
Latitude			Longitude			Township and Range					<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From		Line	Feet From
						9	5S	3W	NE				

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>	I. EPA ID Number	
		T/A

**Read Attached Instructions Before Starting
For Official Use Only**

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 09-04
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						9	SS	3W	NW				

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes i, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
--	-----------------------------	--	--------------------------------------

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 10-03
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project													XII. Indian Lands (Mark 'x')		
Latitude			Longitude			Township and Range				Feet From			Line		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line		
						10	SS	3W	NW						

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
For Official Use Only

Application approved	Date received	Permit Number	Well ID	FINDS Number
mo day year	mo day year			

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
--	-----------------------------	--	--------------------------------------

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 17-04
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						17	5S	3W	NW				

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>	I. EPA ID Number	
		T/A

**Read Attached Instructions Before Starting
For Official Use Only**

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	<input type="text"/>

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year <input type="text"/>	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
--	---	--	--------------------------------------

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 17-05
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						17	5S	3W	NW				

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
--	-----------------------------	--	--------------------------------------

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 17-12
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

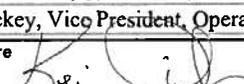
XI. Location of Well(s) or Approximate Center of Field or Project											XII. Indian Lands (Mark 'x')				
Latitude			Longitude			Township and Range					Feet From	Line	Feet From	Line	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec						
						17	5S	3W	SW						

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

 United States Environmental Protection Agency Underground Injection Control Permit Application (Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)					I. EPA ID Number _____			T/A	C					
Read Attached Instructions Before Starting For Official Use Only														
Application approved mo day year		Date received mo day year		Permit Number		Well ID		FINDS Number						
II. Owner Name and Address					III. Operator Name and Address									
Owner Name Petroglyph Energy, Inc.					Owner Name Petroglyph Energy, Inc.									
Street Address 960 Broadway Ave. Suite 500 PO Box 70019			Phone Number (208) 685-7600		Street Address 960 Broadway Ave. Suite 500 PO Box 70019			Phone Number (208) 685-7600						
City Boise		State ID	ZIP CODE 83707		City Boise		State ID	ZIP CODE 83707						
IV. Commercial Facility		V. Ownership		VI. Legal Contact		VII. SIC Codes								
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other		<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator										
VIII. Well Status (Mark "x")														
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year			<input checked="" type="checkbox"/> B. Modification/Conversion			<input type="checkbox"/> C. Proposed							
IX. Type of Permit Requested (Mark "x" and specify if required)														
<input type="checkbox"/> A. Individual		<input checked="" type="checkbox"/> B. Area		Number of Existing Wells 111		Number of Proposed Wells 1		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 20-06						
X. Class and Type of Well (see reverse)														
A. Class(es) (enter code(s)) II		B. Type(s) (enter code(s)) R		C. If class is "other" or type is code 'x,' explain			D. Number of wells per type (if area permit) 1 well, type R							
XI. Location of Well(s) or Approximate Center of Field or Project														
Latitude		Longitude			Township and Range					XII. Indian Lands (Mark 'x')				
Deg _____	Min _____	Sec _____	Deg _____	Min _____	Sec _____	Sec 20	Twp 5S	Range 3W	1/4 Sec NW	Feet From _____	Line _____	Feet From _____	Line _____	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
XIII. Attachments														
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)														
For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.														
XIV. Certification														
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)														
A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations					B. Phone No. (Area Code and No.) (208) 685-7600									
C. Signature 					D. Date Signed 07/27/2015									



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
--	-----------------------------	--	--------------------------------------

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 20-07
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project													XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range							<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From		Line
						20	SS	3W	NE					

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 20-11	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						20	5S	3W	SW				

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

	United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>	I. EPA ID Number	
		T/A	C

**Read Attached Instructions Before Starting
For Official Use Only**

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A.	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
Operating			

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 20-15	

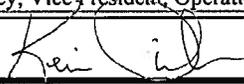
X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

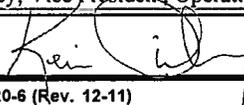
XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						20	5S	3W	SE				

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification	
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)	
A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

 United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>		I. EPA ID Number												
			T/A	C										
Read Attached Instructions Before Starting For Official Use Only														
Application approved mo day year		Date received mo day year		Permit Number										
II. Owner Name and Address			III. Operator Name and Address											
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.											
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019											
City Boise		State ID	Phone Number (208) 685-7600											
		ZIP CODE 83707	City Boise											
			State ID											
			ZIP CODE 83707											
IV. Commercial Facility		V. Ownership		VI. Legal Contact										
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other		<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator										
VIII. Well Status (Mark "x")														
<input checked="" type="checkbox"/> A. Operating		Date Started mo day year		<input checked="" type="checkbox"/> B. Modification/Conversion										
				<input type="checkbox"/> C. Proposed										
IX. Type of Permit Requested (Mark "x" and specify if required)														
<input type="checkbox"/> A. Individual		<input checked="" type="checkbox"/> B. Area		Number of Existing Wells 111										
				Number of Proposed Wells 1										
				Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 31-03										
X. Class and Type of Well (see reverse)														
A. Class(es) (enter code(s))		B. Type(s) (enter code(s))		D. Number of wells per type (if area permit)										
II		R		1 well, type R										
XI. Location of Well(s) or Approximate Center of Field or Project				XII. Indian Lands (Mark 'x')										
Latitude		Longitude		Township and Range								<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From	Line	
						31	5S	3W	NW					
XIII. Attachments														
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.														
XIV. Certification														
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)														
A. Name and Title (Type or Print)										B. Phone No. (Area Code and No.)				
Kevin Dickey, Vice President, Operations										(208) 685-7600				
C. Signature										D. Date Signed				
										07/27/2015				

United States Environmental Protection Agency Underground Injection Control Permit Application <i>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</i>	I. EPA ID Number	
		T/A

**Read Attached Instructions Before Starting
For Official Use Only**

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")

<input checked="" type="checkbox"/> A.	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed
Operating			

IX. Type of Permit Requested (Mark "x" and specify if required)

<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 31-05
--	---	---------------------------------	-------------------------------	---

X. Class and Type of Well (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')		
Latitude			Longitude			Township and Range								
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line			Feet From
						31	5S	3W	NW					<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

XIII. Attachments

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A--U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title <i>(Type or Print)</i> Kevin Dickey, Vice President, Operations	B. Phone No. <i>(Area Code and No.)</i> (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)				
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1	Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 31-07

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						31	5S	3W	NE				

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 31-12	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project													XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range							<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line	Feet From		Line
						31	5S	3W	SW					

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015



United States Environmental Protection Agency
**Underground Injection Control
 Permit Application**
 (Collected under the authority of the Safe Drinking
 Water Act. Sections 1421, 1422, 40 CFR 144)

I. EPA ID Number		
	T/A	C
U		

Read Attached Instructions Before Starting
 For Official Use Only

Application approved mo day year	Date received mo day year	Permit Number	Well ID	FINDS Number

II. Owner Name and Address			III. Operator Name and Address		
Owner Name Petroglyph Energy, Inc.			Owner Name Petroglyph Energy, Inc.		
Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600	Street Address 960 Broadway Ave. Suite 500 PO Box 70019		Phone Number (208) 685-7600
City Boise	State ID	ZIP CODE 83707	City Boise	State ID	ZIP CODE 83707

IV. Commercial Facility	V. Ownership	VI. Legal Contact	VII. SIC Codes
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	<input type="checkbox"/> Owner <input checked="" type="checkbox"/> Operator	

VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating	Date Started mo day year	<input checked="" type="checkbox"/> B. Modification/Conversion	<input type="checkbox"/> C. Proposed

IX. Type of Permit Requested (Mark "x" and specify if required)			
<input type="checkbox"/> A. Individual	<input checked="" type="checkbox"/> B. Area	Number of Existing Wells 111	Number of Proposed Wells 1
		Name(s) of field(s) or project(s) Antelope Creek Ute Tribal 36-08-E4	

X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s)) II	B. Type(s) (enter code(s)) R	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit) 1 well, type R

XI. Location of Well(s) or Approximate Center of Field or Project												XII. Indian Lands (Mark 'x')	
Latitude			Longitude			Township and Range						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Deg	Min	Sec	Deg	Min	Sec	Sec	Twp	Range	1/4 Sec	Feet From	Line		
						36	5S	4W	NE				

XIII. Attachments
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.

XIV. Certification
 I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print) Kevin Dickey, Vice President, Operations	B. Phone No. (Area Code and No.) (208) 685-7600
C. Signature 	D. Date Signed 07/27/2015

ATTACHMENT NO. 10

WELL BORE DIAGRAMS FOR THE UIC WELL

Ute Tribal 17-12 Well History

Well History:

Spud Well: 10/8/1996
 Completed: 11/11/1996
 First Production: 12/25/1996

Tops (KB):

BMSW* Found at 1092'

Green River 1271'

A Marker 3855'

X Marker 4342'

Douglas Creek 4488'

B Limestone 4874'

Castle Peak 5390'

Basal Carbonate 5842'

Perf History

11/8/1996

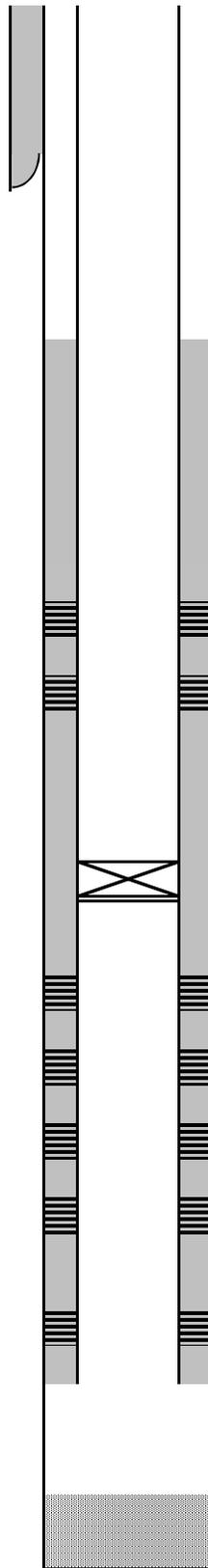
C06	4692' to 4696'
D3	4970' to 4973'
E01.2	5486' to 5490'
E01.2	5498' to 5502'

10/12/2010

B06	4040' to 4054'
B06	4062' to 4072'
B10	4260' to 4266'
B11.1	4298' to 4304'
C03.2	4465' to 4481'
E01.2	5482' to 5491'
E01.2	5496' to 5502'
E01.2	5506' to 5513'

10/14/2010

BP	at 4650'
----	----------



GL: 6082'

KB: 6092'

8 5/8" 24# Surface CSG @ 412' KB
 cmt'd w/250 sx

Surface Hole size 12 1/4"

Cement top @ 2250'
 5 1/2" 15.5# J-55 CSG @ 5866'
 cmt'd w/455 sx

Hole Size 7 7/8" bit

Perf's:

B06 4040' to 4054'
 B06 4062' to 4072'
 B10 4260' to 4266'
 B11.1 4298' to 4304'
 C03.2 4456' to 4481'
 BP @ 4650'
 C06 4692' to 4696'
 D3 4970' to 4973'
 E01.2 5482' to 5491'
 E01.2 5496' to 5502'
 E01.2 5506' to 5513'

PBTD @ 5836' KB

TD @ 6160' KB

Petroglyph Operating Co., Inc.
 Ute Tribal #17-12
 (2527' FSL & 612' FWL)
 NW SW Section 17, 5S- 3W
 Antelope Creek Field
 Duchesne Co. Utah
 API#: 43013317130000

*Plate 1 Utah Geological Survey Special Study 144. (2012).
 BMSW Elevation Contour Map, Uinta Basin, Utah. [map].
 (CA 1:200,000)

(Not to Scale)

Ute Tribal 17-12 Injection

Well History:

Spud Well: 10/8/1996
 Completed: 11/11/1996
 First Production: 12/25/1996

Tops (KB):

BMSW* Found at 1092'

Green River 1271'

A Marker 3855'

X Marker 4342'

Douglas Creek 4488'

B Limestone 4874'

Castle Peak 5390'

Basal Carbonate 5842'

GL: 6082'

KB: 6092'

8 5/8" 24# Surface CSG @ 412' KB
 cmt'd w/250 sx

Surface Hole size 12 1/4"

Cement top @ 2250'
 5 1/2" 15.5# J-55 CSG @ 5866'
 cmt'd w/455 sx

Tubing 2 7/8" 6.5# J55

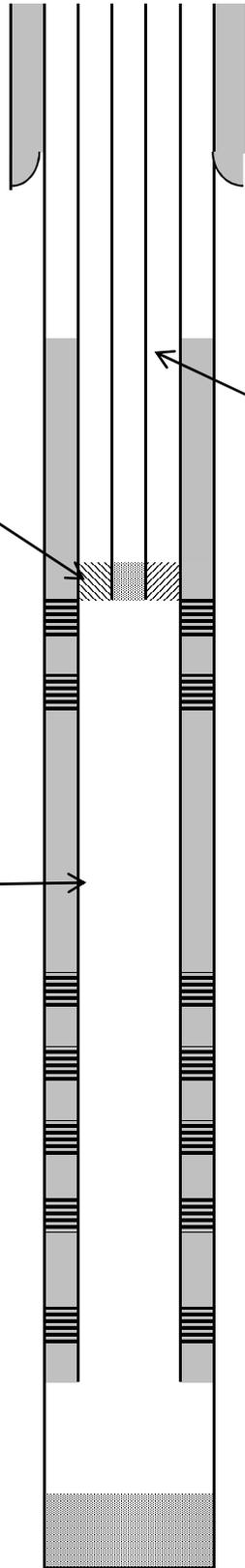
Hole Size 7 7/8" bit

Perf's:

- B06 4040' to 4054'
- B06 4062' to 4072'
- B10 4260' to 4266'
- B11.1 4298' to 4304'
- C03.2 4456' to 4481'
- C06 4692' to 4696'
- D3 4970' to 4973'
- E01.2 5482' to 5491'
- E01.2 5496' to 5502'
- E01.2 5506' to 5513'

Injection packer @ 3950'

Remove BP @ 4650'



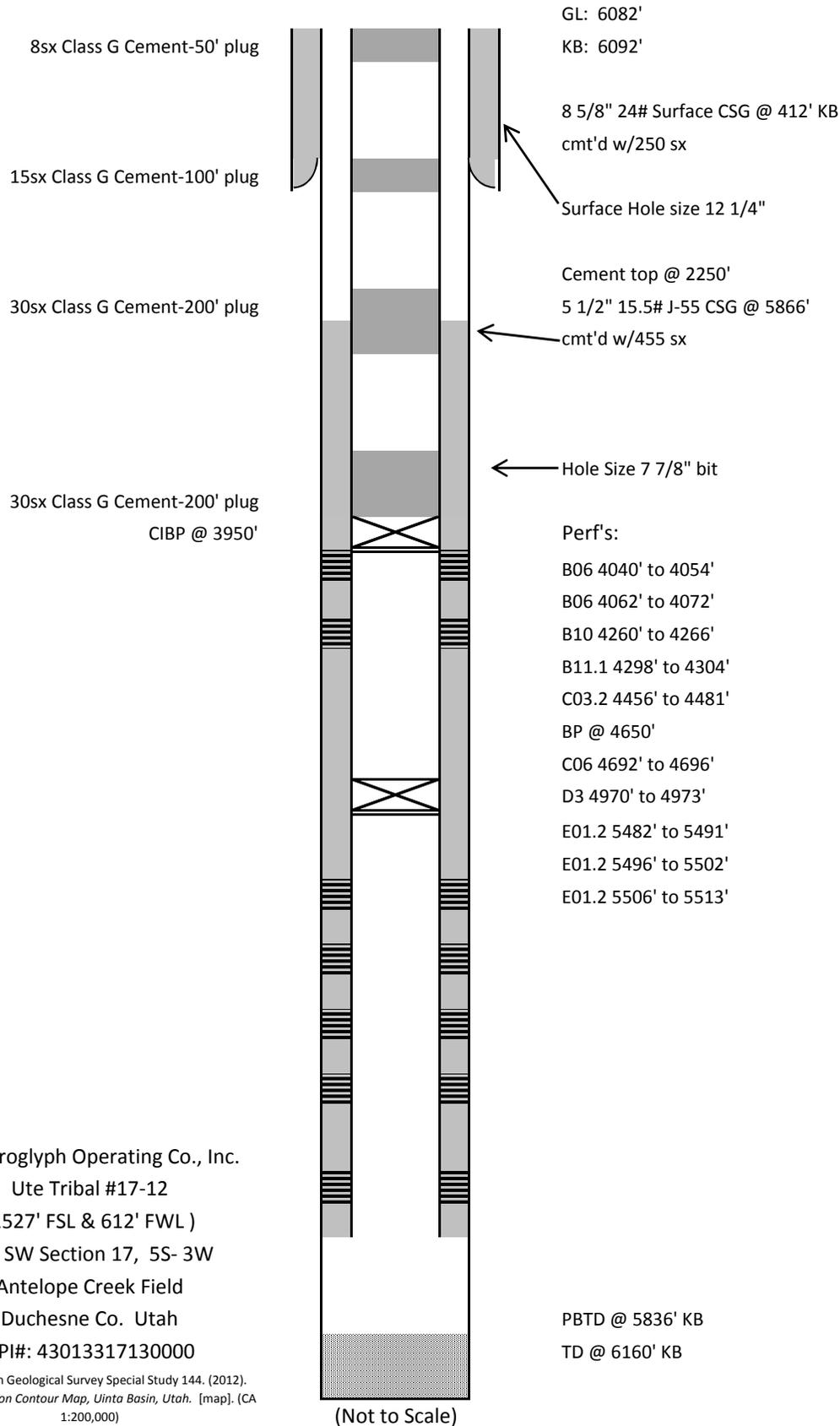
PBTD @ 5836' KB

TD @ 6160' KB

Petroglyph Operating Co., Inc.
 Ute Tribal #17-12
 (2527' FSL & 612' FWL)
 NW SW Section 17, 5S- 3W
 Antelope Creek Field
 Duchesne Co. Utah
 API#: 43013317130000

*Plate 1 Utah Geological Survey Special Study 144. (2012).
 BMSW Elevation Contour Map, Uinta Basin, Utah. [map].
 (CA 1:200,000)

Ute Tribal 17-12 Plug and Abandonment



Petroglyph Operating Co., Inc.
Ute Tribal #17-12
(2527' FSL & 612' FWL)
NW SW Section 17, 5S- 3W
Antelope Creek Field
Duchesne Co. Utah
API#: 43013317130000

*Plate 1 Utah Geological Survey Special Study 144. (2012).
BMSW Elevation Contour Map, Uinta Basin, Utah. [map]. (CA
1:200,000)

ATTACHMENT NO. 11

P&A PROCEDURE

Plug and Abandonment Procedure

Ute Tribal 17-12

43-013-31713

1. Obtain authorization from regulatory agencies for P&A procedures.
2. Set deadman. Rig up pulling unit. Rig down wellhead. Install BOP. Release packer. Trip out of hole with tubing and packer.
3. RIH Set CIBP @ 3950'.
4. Trip in hole with tubing. Establish pump rate, spot 30sxs Class G cement on top of CIBP. This will be a 200' plug.
5. Raise the tubing to 2250' and set balanced 200' cement plug using 30sxs of Class G cement.
6. Raise the tubing to 412' and set balanced 100' cement plug using 15sxs of Class G cement.
7. Set balanced 50' cement plug (8 sxs of Class G cement) from 50' to surface.
8. Cut off wellhead. Install plate and identification P&A post marker. Weld to casing.
9. File reports with the agencies and reclaim surface locations.

ATTACHMENT NO. 12

MIT PROCEDURE

Mechanical Integrity Test Procedure

Ute Tribal 17-12

43-013-31713

Integrity testing can be accomplished by pressuring up the annulus between the casing and the tubing. The pressure and duration of the test will be as required by the EPA.

Test Procedure Details:

1. Two weeks prior, notify EPA of pending work. Shut well in.
2. Record fluid level with echometer.
3. MIRU Service Unit.
4. POOH laying down rods and pump.
5. ND Wellhead. NU BOPs. POOH laying down 2 7/8" tubing.
6. PU plug and packer and new tubing. RIH and breakdown perms.
7. POOH. RIH with injection packer to 3950'.
8. Reverse circulate in packer fluid.
9. Set packer and ND BOPs and NU wellhead.
10. Pressure test casing-tubing annulus to 1500psi for 15 minutes.
11. RDMO.
12. Notify EPA of test, wait for approval.
13. Return to injection.

ATTACHMENT NO. 13

SURETY BOND LETTER



SURETY BOND STATEMENT

July 27, 2015

Petroglyph currently operates 111 injection wells in Antelope Creek Field under EPA UIC Area Permit UT2736-00000. The existing wells are covered by UIC Bond No. LPM 4138351.

Prior to final permit approval, Petroglyph will add a rider to the existing bond to include this well along with the other wells being submitted to EPA at this time.

Kevin Dickey

V.P., Operations

Petroglyph Energy, Inc.

PETROGLYPH OPERATING COMPANY, INC.